

**Descent III Comes  
To The Mac!!**

**Reviewed: GoLive 4.0 • Bryce 4.0 • Apple Studio Display • Viking 56K USB Modem**

# MacHome

july 1999 • [www.machome.com](http://www.machome.com)

Solutions for Work, Play & Education

## Scanner Spectacular

**10 Scanners Reviewed**  
**The Good, the Bad, and the SCSI**

### **New PowerBooks**

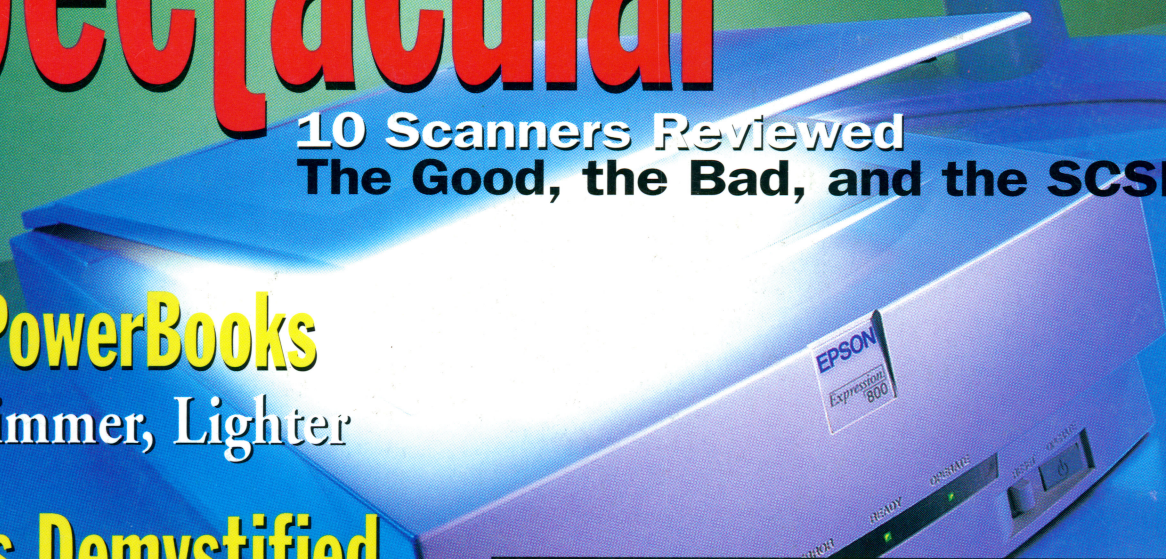
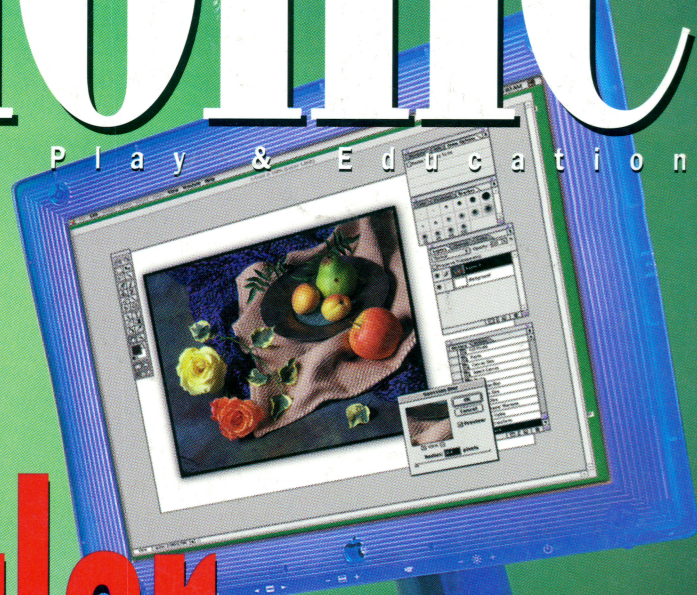
**Faster, Slimmer, Lighter**

### **Graphics Demystified**

**How To Get Started**

### **Wanna Create A Website?**

**Web Tools That Work**

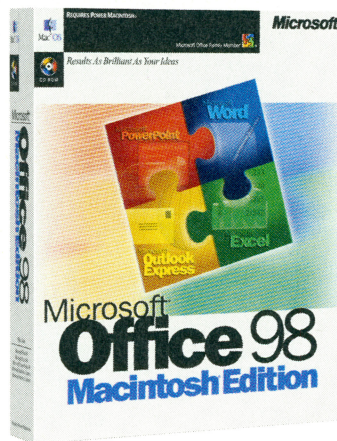






# jet.





# fuel.

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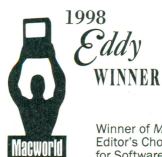
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19:42 You learn the hard way in the outer sector... Like never get into a drinking match with a three-headed Bukaan. Never assume a Strogg is dead even when he's nothing but bloody scraps of straphel. And never go to bed with a Rabaul no matter how many breasts she has.



19:11

THE LINE BETWEEN MAN AND MACHINE SHOULD NEVER HAVE BEEN ERASED.

Blood vessels and wires should never have been crossed. Souls and circuitry, brain stems and processors.

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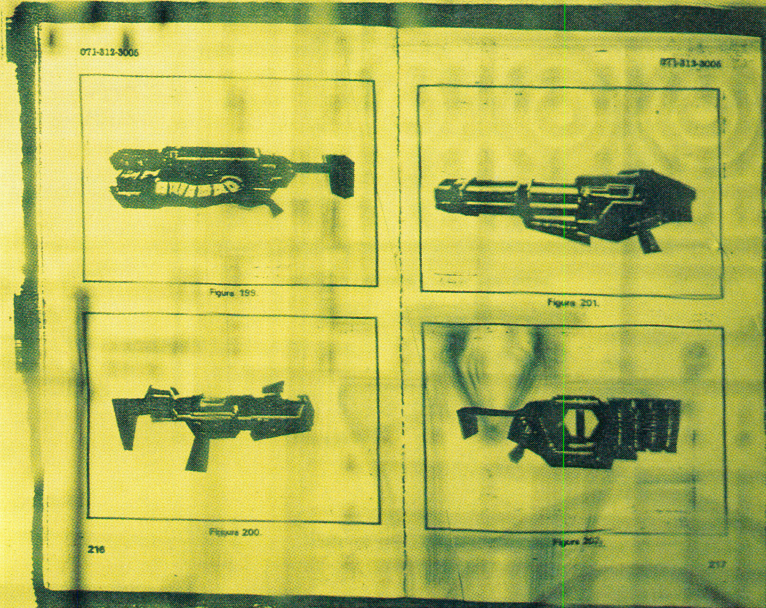
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1	Large, complex missions	What you do in one level could affect another. One false move and you could alert security, flood a passageway, or worse.
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3	Intense environments	Man gun turrets. Blow up subways. Smash glass. Toss grenades with perfect control. Duck to evade hits. Give them Hell.



18:03 Gory images of Straggs have been filling my sleep at night. Their metallic spines jutting awkwardly through muscle, skin and connective tissue, masks of human facial skin smeared and bonded to their cyber-alloy heads, crude but powerful weapons jammed into oozing, gaping sockets. Thank God for endless sleep ahead is dreamless.

17:05 It's often us or them this time. We lose, and we all end up breasting on the grill of some ungently mechanized cannibal. We win, and the town Coalition of Man can start rebuilding the cities in Mars, Olympus, even Earth. Who knows - they might even get the old interplanetary football league going again. (God, I miss Monday Night Football.)

"...there's simply nothing on this planet that can touch Quake II."

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PC Gamer

# U A K E II™





# july 1999 contents [www.machome.com]

volume 7, number 7

## The Creativity Issue

### Scan-O-Rama!

#### 10 Scanners Reviewed \_\_\_\_\_ 14

By David Weiss

The pictures from your vacation in the Bahamas look as though they were taken in a snowstorm in New York during rush hour. What gives? Perhaps it's your scanner. We take a long, longing look at a wide range of scanners, and pick the wheat from the chaff.



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#### A Beginner's Guide to Graphics \_\_\_\_\_ 20

By Max Frischman

The Mac has long been the dominant platform for working with graphics, but many of us have never really delved into that world. Never fear; you don't have to be artistic to play with graphics. From photo retouching to creating your own unique images, this article explains the basics of graphics and graphics applications so you can get a running start.



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#### Tips to Make Your Website Dynamite \_\_\_\_\_ 26

By Alan Stafford

Mastering HTML or a Web page editor is only one component of creating great Web pages. You need to know how to prepare the ingredients you want on your page. Here's a "Hey, *that's* how it works" guide to the all frills and thrills you can throw into your Web mix.

## NewsWire

### Read all about it: news, products, rumors, gossip, quotes, and innuendo

Apple's introduces new PowerBooks: Latest G3s are "the industry's fastest"

Get your kicks with OS 8.6

Newer's FireWire Card brings FireWire to new PowerBooks

QuickTime 4 is at the door

Roam if you want to: Palm VII goes wireless!  
Astronomy tools, USB, FireWire drives, and more



APPLE'S SLIM NEW POWERBOOK

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Cover Photography: Peter Belanger



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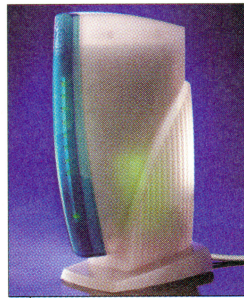
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## Reviewed This Issue

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- ★★★★ GoLive 4.0
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- ★★★★☆ Kai's Photo Soap 2.0
- ★★★★☆ Official Copyright
- ★★★★ Spring Cleaning 3.0

### Your Office: Hardware

- ★★★★ Apple Studio Display
- ★★★★ Best Data Smart One 56K USB Modem 
- ★★★★ DataBook 
- ★★★★ Que! CD-RW Drive 
- ★★★★☆ Viking Components 56K USB Modem 

### Entertainment

- ★★★★ 3D Ultra NASCAR Pinball
- ★★★★ Civilization II Gold
- ★★★★ Emergency Room 2
- ★★★★ Intensor Chair
- ★★★ Sci-Fi Pinball

### Your Family

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- ★★★★ Masterworks from the Collection: The Metropolitan Museum of Art
- ★★★★ JumpStart Numbers
- ★★★ Read and Spell with Zoo-phonics

### Our Rating System

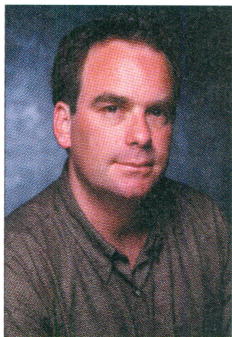
- ★★★★★ **Mac-nificent.** You gotta get it. No flaws.
- ★★★★ **Excellent.** Recommended even if it has a minor flaw or two.
- ★★★ **Average.** Despite problems, still a worthwhile product.
- ★★ **Below Average.** Has serious flaws that limit its usefulness or fun.
- ★ **Poor.** Avoid this product at all costs.



Indicates iMac/G3 compatibility



# from the chief [Editorial]



## Good News, Bad News

**M**y name is John, and I'll be your Editor. That's right. Amiable MacHome editor-in-chief Alan Stafford has left the building. Alan's three-year tenure was a watershed for the magazine, and he was with us through good news and bad from Apple. We're sorry to see Alan go — that's bad news. But let's hear his own explanation:

*Apple is much more fun to watch these days. But I'll soon be watching from a different vista. After three years, this is my last issue with MacHome. This magazine is the first job I ever really liked, but I'm going to investigate what it's like on the other side of the fence. That's right; I'm going to work for PC World. Forgive me, but I gotta see what that grass is like.*

We understand. Good news, bad news — that's what we've come to expect in the Mac biz. But as the new head cheese here at MacHome's editorial side, I'm on the edge of my seat, you betcha. Having covered Mac issues for several years now (both here as News Editor and previously as a staffer at Ziff-Davis' MacWEEK), I've seen the landscape go from not so great to pretty darned amazing. Apple, which most folks had written off as a footnote just a couple years ago is once again known worldwide as a technical innovator and conduit for the information revolution. Users or developers, people are excited again to be a part of the Mac family...and it does feel more like a family than an industry. Not because it's smaller than the PC industry, wise guy — it just feels *closer*. Can't you feel the warmth? Mmmmm, nice.

I'm excited to be chronicling this period of Apple's history. Oh sure, there's problems — there's problems everywhere you go. But make no mistake: this is computing's golden age, and we Mac users are at the front line of it all. We don't always get first consideration from the larger computer industry, but we *matter* again, and the industry knows we're not going away. To some, the Mac is like a burr in the sock that you just can't get out, but to the more insightful among us, it's a disproportionately influential sector that drives the industry to push themselves farther, to innovate more than they thought they could.

To help make sense of all the action, we have two new folks on the editorial staff. Please welcome Jackie Dove, a fine technology writer, web designer and longtime Mac user, joining us as News Editor. And Alex Handy, a scholarly young lad with tousled hair, Mac gaming wunderkind and the #1 ranked *Carmageddon* player in the country, steps up as our new Gaming and Education Editor.

Here we go. As always, keep your hands and feet inside during the ride.

John Poultney  
Editor

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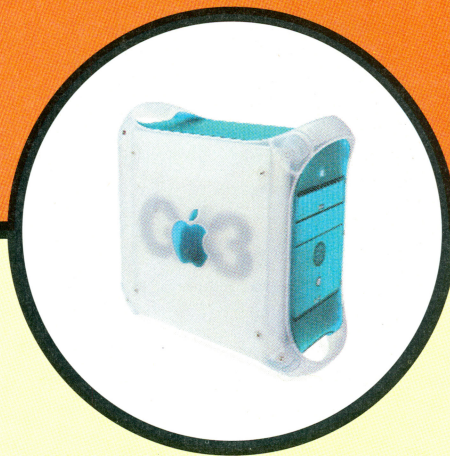
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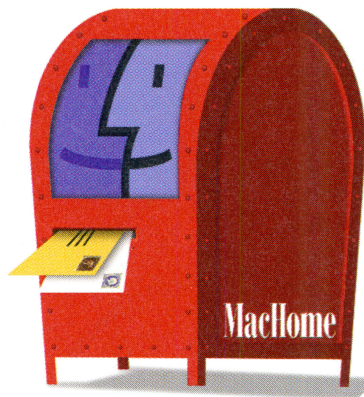
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# Write On

[Your Letters]



## Trouble Out in Iowa

I was about to skip over Frank O'Connor's article on modems when I caught the phrase, "If you think static is annoying when you're calling your sister in Iowa ..."

I was going to skip the article because in my Iowa town I don't need a modem. Yes, here in Cedar Falls, Iowa, surrounded by stereotypical corn fields, we have cable modems accessing a fiber-optic digital cable system. While those of you in more populous areas drool and dream about the day you too can have a cable modem, remember that in our little town of 30,000 people in Iowa, we're doing it today! We pay \$30/month for 4 Mbps service (\$40/month for 10 Mbps), which includes the cost of the cable modem itself. Did I mention that installation is free? By the way, it really screams. Multi-megabyte downloads that used to take hours with dial-up connections now take minutes.

Of course, Iowa has other technology secrets. For example, there's the ICN (Iowa Communications Network). Did you know that every school in Iowa is connected via a fiber-optic network that allows data and video links anywhere in the state?

But maybe I shouldn't be telling you this. After all, Iowa is consistently ranked among the top three states in the nation in which to raise a family, and our schools consistently rank at or near the top in the nation. I wouldn't want too many newcomers to come in and spoil it.

*John Lehman*

## Affirmed Firmware

I just updated my firmware for my Supra Express 56e modem after reading the troubleshooting article [Troubleshooting Your Internet Connection] in *MacHome's* May issue. I never got a connection over 33.6 Kbps in the six months I have been online,

and at "peak" times sometimes got only a 28.8 Kbps connection. I just connected at 49.33 Kbps, so that is an improvement. Thank you all so much for all your great articles. Even though I have Mac OS 7.6 on a Power Computing PowerBase200, and most of the focus is on the iMac and OS 8.x, I still find helpful info in *MacHome*. I don't know what I would do if I didn't have my *MacHome* magazine to explain all the computing mysteries.

*Josephine Cook*

Your April issue alone was worth the price of a year subscription. "Minimizing Downloading Messes" in Back to Basics saved me a hassle I have been dealing with for nearly two years. My desktop is much cleaner now thanks to the "download files to" and "delete after expanding" hints.

*Michael V Drawdy*

## 1984 Was Nothing Like 1979

In the April 1999 issue, page 20, you write that Macs have been around 20 years. I thought Macs started in 1984. (Maybe R&D was started earlier?)

*Andrew Starr*

*I am a victim of New Math. "15" rounds up to 20, you know.*

## He's an Animal

In the Connections section of your April 1999 issue you mentioned a couple of animal-rescue sites. I wanted to add a wonderful site for finding homes for homeless pets called Petfinder ([www.petfinder.org](http://www.petfinder.org)). This is a nonprofit site run by two very dedicated people with many volunteers posting animal shelter pets available for adoption. The

site provides home pages for shelters nationwide and allows them to post their available pets with a description and photo. There are search capabilities for your local area. Many homeless animals have found wonderful homes through this site.

*Diane Racz*

## Mmmn, Beeeer

In reference to your "Internet Beats Beer" article [March 1999], page 52, I am very disappointed in you. What a disservice you have done to anti-substance abuse campaigns! Why? Is this someone's perverted sense of humor? Binge drinking at college, if you will recall, has resulted in the deaths of several students lately. "*MacHome*, however, encourages students to put down their mice and party. ..." You won't print the words I have for you, but you should print an apology to those ruined by college (or anywhere else) drinking. Also, fire the moron who was insensitive enough to print that.

*John Klingel*

*We didn't have to — she left of her own accord. Mere coincidence?*

## Mama's Boy

To quote from Alan Stafford's April editorial, "If you saw a picture on our cover of a mint-condition Performa 475, would you get excited?" Well, I would! That's my computer! My baby is a cover girl!

*Mariane Matera*

## Everybody Writes, Nobody Reads

I won't see this letter because I have switched to a PC. The switch was made because of price. It was a difference of \$1,000 for a comparable setup.



But [if I had stuck to Macs], by the end of the year I would have forgotten the thousand bucks and kept my sanity. If anyone out there is thinking of changing, I say, don't! The difference is simple: money versus intelligence. Windows 98 is stupid and Linux is worse. Now I know the grass wasn't greener; it was a frozen screen.

Leon Forman

### If U Can Read This, U R 2 Close

I have just finished the April 99 issue of *MacHome*. Overall it is a great magazine. However, I would like to request that you keep in mind that not all of us are lexicology majors. I refer to words such as "transmogrified" (p.10), "naif" (p. 12), "narcissistic" (p. 17), "rhomboid" (p. 25), "peregrine" (p. 41), "phylum" and "elucidating" (p. 42), "predation" (p. 52), and "strident" (p. 80), as well as a number of other somewhat less arcane words. Keep up the great articles but, at the same time, try not to wear out my dictionary.

Don Helwig

 Please pardon our erudition.

### PowerSchooled

I was reading the May 1999 edition of *MacHome* and was interested by the education article by Cathy Lu [Running an A-Plus Classroom]. Although she identified many products for use both administratively and in the classroom, she didn't mention a fantastic (and cross-platform) school records management and gradebook software. It is a browser-based program designed by the folks at PowerSchool ([www.powerschool.com](http://www.powerschool.com)). The software is served from a Power Mac G3. It is really easy to use. There are support personnel who actually respond to questions and problems. The software is being used by a growing number of large urban and rural districts. There is a fully functional standard version available, as well as a fully functional beta that is being tested and worked over by our school district.

Jason Hansen

### Feeling Hot, Hot, Hotline

I just got my latest *MacHome* and was pleased to find an informative article on Hotline. As Webmaster of Hotline Central (aka TroutMask), I would like to let your readers know that TroutMask is now Hotline Central and can be found at the following URL: [www.hotlinecentral.com/index.shtml](http://www.hotlinecentral.com/index.shtml).

Thanks for mentioning my site! And I'll keep reading *MacHome*!

Les Brown

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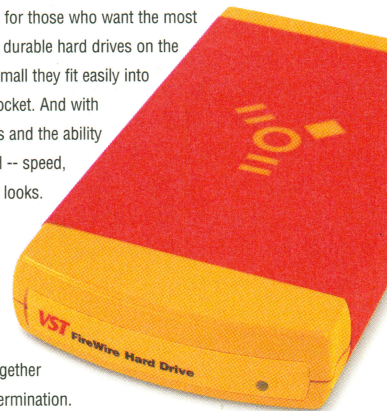
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## New PowerBooks Ahoy!

### Good News Aplenty at Developer's Conference

**I**t's starting to be a regular event, these feel-good conference speeches with the fervent followers and surprise product announcements. In early May, Apple continued the tradition at its annual World Wide Developers Conference (WWDC) in San Jose, California. More than 2,500 paid attendees were in town for the expo, which showcases the latest and greatest in Mac development techniques and tools. That's about a 43% increase from the 1998 conference, and a good sign of the Mac market's continuing renaissance.

Apple, of course, needs to keep developers writing cool software for the platform — after all, that's what makes the Mac what it is. And what better way to whip developers into a frenzy than announcing the industry's fastest notebooks? So Steve Jobs did just that, announcing two new **G3 PowerBooks**, one running at **333MHz** (\$2,499) and the other at **400MHz** (\$3,499). They're lighter than the current PowerBook G3s — about 5.6 lbs., compared to almost 8 for the earlier models, and about 20% slimmer. Also, Apple says, they can run up to five hours on a single battery, which Jobs said is "enough to watch Austin Powers twice in a row." The new 'Books have big, zesty 14.1-inch screens, and two USB ports for the latest peripherals. Jobs made sure the developers would stick around through the conference when he said Apple would give away one 400-MHz model *per hour* for the duration of the show.

No big news on the iMac front, except that they, and other Mac products, are now being sold by Sears. Now Sears, of course, is where America shops. And many Americans shop for their first computer at Sears, so this arrangement could bode well for the Mac's expansion throughout the consumer world.

Software-wise, the company announced it would immediately start shipping OS 8.6 and OpenGL. OpenGL is an application programming interface (API) and 3D graphics library invented by Silicon Graphics Inc. that's making big waves on the gaming front (see page 56). The technology reduces significantly the time and effort needed by programmers to develop games for both Mac and Windows platforms. Apple also released Mac Runtime for Java (MRJ) 2.1.2, for faster Java applications.

In a surprise move, Jobs happily announced that Dragon Systems is re-entering the Mac market with its powerful speech-recognition package, Naturally Speaking. Dragon CEO Janet Baker told the crowd to expect a release before the end of the year.



## Get Your Kicks with OS 8.6

**A**mong the many new products Apple announced at the recent developer's conference is **MacOS 8.6**, which is now available as a free update to OS 8.5. The new OS isn't a huge leap, Apple says — but it does include a couple pretty useful tidbits in addition to some bug fixes.

There's an updated version of Sherlock, which now lets you search through portable document format (PDF) and HTML files on your system, the newest versions of Mac Runtime for Java (MRJ) for better Java performance, and improved USB and FireWire support.

When used with the new G3 PowerBooks, Apple says, OS 8.6 provides better power management than earlier systems, which results in more battery life.

Jobs also previewed features from upcoming OS releases. Among these: Sherlock II, with new commerce-search functions so you can find items by price and availability, and Quartz, a new graphics technology that provides cool compositing and layering functions right in the OS.



## Hey, You Forgot Firewire!

**W**ell, yes and no. Apple's new PowerBooks don't include FireWire ports, just USB.

But there's help! If you have a need for FireWire with your new PowerBook, check into Newer Technologies' **FireWire 2 Go** card, a slim little number that fits into the PowerBook's CardBus PC Card slot.

FireWire 2 Go, priced at \$249, includes an eight-foot cable and a CD with Apple's QuickTime 4 Pro. The card needs OS 8.6 or later. Newer Technologies, 316-943-0222, [www.newertech.com](http://www.newertech.com)





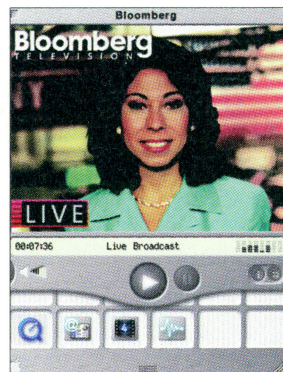
# Quicktime 4 At the Door

**A**stute readers of this space may recall our February article, entitled “QuickTime Going Prime Time,” in which we reported that Apple was on track to add streaming video capabilities to its venerable digital-media architecture. We had been told that Apple would make the announcement at the January Macworld Expo, but *nooooo*. Instead, we had to wait more than three months until the NAB (National Association of Broadcasters) conference in Las Vegas, held in April. At this show, aimed at the professional broadcasting and video community, Apple unveiled the public beta of **QuickTime 4**, along with the QuickTime Streaming Server component for Mac OS X Server. The update has a snazzy new interface that updates the Mac’s traditional “desktop blotter” windows with the always handsome and futuristic look of burnished aluminum.

Apple says the new version lets users experience high-quality Internet video playback over even relatively slow connections such as 28.8Kbps modems. Initial reaction to the software was mixed, with some online discussion participants lauding the streaming performance, others complaining that it was unacceptable. But most liked the new look of the software as well as the addition of bass, treble and balance controls for the soundtrack.

As for the streaming, the capacity is added via adoption of the RTP and RTSP (Real-Time Protocol and Real-Time Streaming Protocol, respectively) standards. The old familiar Movie Player app is supplanted by the QuickTime Player, which can connect directly to Internet video sources and has support for MP3 audio files (but not for RealVideo). Apple touts the player’s “perfectly synchronized audio and video streams with remarkable clarity and quality.” Apple also offers the Pro version for \$30, which has a mess of effects, including wipes, chroma keys, color adjustments and crossfades, as well as filters for blur, zoom, emboss, film “noise,” and others. Your QuickTime 3 Pro registration code will activate QuickTime 4’s Pro features.

Apple said QuickTime 4 should be finalized July’s Macworld Expo.



# Finally, it's Final Cut

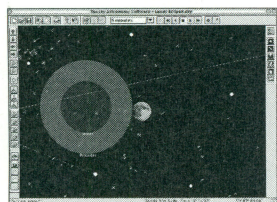
**A**pple started shipping its highly anticipated **Final Cut Pro** video-editing and production package at the NAB expo. Apple’s Phil Schiller, VP of worldwide product development, touts the QuickTime-based package as “definitely upstream of Premiere,” referring to Adobe’s venerable desktop-video package. Final Cut Pro, says Apple, gives users the same capabilities of professional-quality setups at around a tenth of the price.

Final Cut Pro itself (just the software) lists for \$999. A complete setup — Apple suggests a FireWire-equipped Power Mac G3 (300MHz, 128MB of RAM, OS 8.5 and a big, big hard drive) and a digital video (DV) camera are de rigueur — would cost roughly \$5,000. If you don’t have a DV camera, Final Cut Pro also works with Pinnacle Systems’ TARGA video capture cards, though these aren’t cheap, ranging from \$2,645 to \$4,495.

Final Cut makes extensive use of the Mac’s drag-and-drop functionality, and has boatloads of built-in effects. It can also work with simultaneous computer and TV monitors, so you can tell what your finished product will look like.

# Look! Up in TheSky!

**A**stronomy buffs rejoice! There’s a new software package in town. **TheSky** for Macintosh is sure to turn you into a stargazin’ fool in no time, what with its ability to view the sky from anywhere on



Earth between 4712 BC and 10,000 AD. The \$129 package includes an extra CD-ROM with 550,000 astronomical objects, as well as the ability to import additional data such as ASCII text.

The sun, moon, major planets, 1,000 comets — they’re all here. For those of you new to astronomy, there’s a tutorial called “Patterns in TheSky,” that teaches basic concepts and terminology. *MacHome* says get out in the night and go nuts.

*Software Bisque, 800-843-7599, [www.bisque.com](http://www.bisque.com)*

# Sagem, Kensington Go Translucent

**I**f Casper the Friendly Ghost were a Mac user, he’d be pleased at the news of several new ghostlike USB products for his new system. Of course we’re talking about **Sagem’s Planet-ISDN** USB adapter, with which USB Mac users can reap those fast, satisfying connection speeds of ISDN (Integrated Services Digital Network) — somewhere around 128Kbps. Space-age bonus: the \$275 device is powered entirely by the USB port.

And there’s also Kensington’s latest pale and wan offering, the **Orbit \$50 USB Trackball** and the **\$30 USB Mouse-in-a-Box**. These are based on the popular Kensington peripherals of the same name, but are translucent, USB, and styled in that arresting iMac fashion. To know them is to love them, in all likelihood.

*Sagem, 800-454-4736, [www.isdnshop.com/sagem/index.html](http://www.isdnshop.com/sagem/index.html)  
Kensington, 800-280-8318, [www.kensington.com](http://www.kensington.com)*





## Palm Reader

**3Com's Palm Computing unit is hyperactive.**

And to prove it, mere months after introducing the vaunted Palm V and Palm IIIx "connected organizers," the company is now joining the golden age of communications with the **Palm VII**, a wireless version of the ridiculously popular PDA.

The Palm VII features a flip-up antenna that rather resembles a popsicle stick. When operating correctly, this lets you send and receive mail, and of course, access online info like you're on the Web. Only you can do this in a wireless fashion.

But there's a slight catch. The wireless network to which you will connect is actually a community of Palm's own design, not the Internet we all know and love. Palm has signed up a lissome coterie of big-name content providers (like ABCNEWS.com, Fodor's, Frommer's, TicketMaster, Visa and Merriam Webster) for the usual fodder — news, weather, sports, tickets, shopping and such — and these partners will format their content to fit the Palm VII's slim and trim screen. Palm explained that using a device like this to surf the Web *per se* wouldn't work so well, as most Web pages are designed for larger monitors.

And also: If you use the Palm VII for e-mail, you'll have to use a palm.net address, as in JoeSchmoe@palm.net. If you have an existing address, Palm says it won't work on their network — and you can't use the network to check on other E-mail accounts. When pressed for an explanation, a Palm spokeswoman said the company is trying to "keep things simple," and that adding all sorts of extra functionality could result in additional hardware requirements and a larger form factor. This seems unlikely, as the process of checking additional e-mail accounts is generally software-driven. But that's what they say.

Palm's plan for the network charges users different rates based on how much data they download. A standard monthly plan costs \$10; this gives you access to about 50Kbytes (about 150 screens) of data. The \$25 expanded plan allows 150Kbytes, or around 450 screens. Overage charges are 30 cents per Kbyte, so be careful, you. The Palm VII, available initially in the New York area and then nationwide, costs \$600. *Palm Computing, 408-326-5000, www.palm.com*



## Pachelbel's Canon

**W**ith the small office/home office sector in mind, Canon recently introduced two new flatbed scanners that are sure to win fans 'round the globe.

The CanoScan FB 1200S, with 1200-by-1200 dot-per-inch (dpi) res-



olution, lists for \$499, while the ultra-compact **CanoScan FB 620U**, weighing in at only \$129, provides 600-by-600 dpi resolution.

The FB 1200S, a SCSI-based model, uses a two-pass color scanning CCD (charge-coupled device) to achieve its high optical resolution. The system also incorporates an optical technology that Canon calls VAROS (Variable Refraction Optical System), which the company has used previously in video cameras. VAROS, says Canon, increases resolution by a "pixel-shift" technique that refracts light from the lens, then shifts a half pixel before capturing the light with the image sensor. When the system continues its scan, the gaps typically left between sensing points are "effectively" eliminated.

The 620U should appeal to owners of newer Macs, as it sports a handy USB interface. The scanner offers 36-, 24- and 12-bit scanning modes; the latter is intended for grayscale work. The device uses LED technology and has fewer mechanical parts than most scanners, which makes possible a more compact design. *Canon, 800-652-2666, www.canoscan.com.*

## One-Step 3D Models!

**H**ow can it be? There can't really be a package that converts your scanned or digital photos to 3D models in a single step, can there? Metacreations says yes ... yes there is.

They call this curious \$499 package **Canoma**, and they say it simplifies the 3D creation process substantially because you don't have to learn complex 3D construction rigamarole; you just need some pictures. Once they're converted from the lame 2D format, you can add text, apply effects, even change surface textures without undue worry.

Aside from the 3D conversion, the software also has various rendering capabilities and the ability to create "fly-through" QuickTime movies of a scene or object. *MetaCreations, 800-472-9025, www.metacreations.com*





# Tame the Savage Fonts

**T**ype 1, TrueType, PostScript, Screen fonts, Printer fonts. How's the average user supposed to make sense of the madness that is font management? Well sir, Extensis and Adobe both have plans to make it a snap to locate, organize and utilize those unruly fonts.

Extensis has released **Suitcase 8**, which is compatible with OS 8.5, and incorporates FontAgent, a system to identify duplicate fonts, minimize problems resulting from TrueType and PostScript "collisions," (these two font types don't always get along), and create family folders of like fonts. The \$90 software (upgrades are \$40) also includes MenuFonts, which organizes and presents fonts in their correct type-styles, and groups them together, and Suitcase 8 XT, an extension for QuarkXPress that opens fonts on the fly as they are required. Say goodbye to those annoying missing font alerts, says Extensis.

Of course Adobe won't take this lying down. Just a week or so after Extensis' announcement, they announced Adobe Type Manager (ATM) Deluxe 4.5, which is also designed to streamline font management. ATM Deluxe 4.5, which wasn't shipping at press time, will be fully compatible with Adobe's forthcoming InDesign page-layout software. Like previous editions of ATM, this one lets you create custom font sets and activate or deactivate them as needed, as well as perform font-related troubleshooting. It also has new functions for temporary and permanent font sets, for working with recurring or unique documents. A Copy Font/Set function provides a fast way to collect fonts for final document output, while a Manage Duplicate Fonts feature lets you examine your list of known fonts for duplicates and format conflicts.

ATM Deluxe 4.5 lists for \$70, and upgrades are \$50. The program is bundled with Adobe Type Reunion, a utility for grouping similar fonts for faster selection when creating documents.

Extensis, 800-803-6921, [www.extensis.com](http://www.extensis.com)

Adobe Systems, 800-833-6687, [www.adobe.com](http://www.adobe.com)

# New iMac Books Tell All

**S**eems the iMac is suddenly the uh, Apple of publishers' eyes. No less than three — count 'em, three — thick n' glossy books have hit the marketplace in recent months that celebrate all things iMac.

Sams Publishing's *Teach Yourself the iMac in 24 Hours* is a lavish, 369-page tome written by noted Mac consultant (and MacHome Journal contributing writer) Gene Steinberg. The \$20 book contains 24 lessons on such topics as connecting to the Internet, getting the most from the iMac's included software, using the built-in modem as a fax machine, and adding disk drives, printers, scanners and RAM.

Then there's Don Rittner's 374-page *The iMac Book*, from Coriolis Press. Sporting a translucent cover and a foreword by Mac Guru Guy Kawasaki, this \$25 book is heavy on Internet methods and resources, and also points out the nuances of most of the hardware and software you'll

use in your iMac journey.

There's also *The Little iMac Book*, published by Peachpit Press and written by Robin Williams (the author, not the comedian). This \$18, 192-page book continues William's "Little" motif — she also wrote *The Little Mac Book* and *Beyond the Little Mac Book*. This one has separate chapters on making simple drawings, databases, paintings and spreadsheets, as well as plain talk about peripherals.

Sams Publishing, [www.mcp.com/publishers/sams](http://www.mcp.com/publishers/sams)

Coriolis Press, [www.coriolis.com](http://www.coriolis.com)

Peachpit Press, [www.peachpit.com](http://www.peachpit.com)



# Drive, She Said

**L**aCie has made good on its promise to bring CD-Rewritable (CD-RW) functions to USB Macs with its straightforwardly named **LaCie 226 CD-RW drive**. The \$379 unit has 2X write and re-write speeds and a 6X read speed. It can, of course, write various types of volumes aside from CD-RW, including audio and standard CD-ROM discs.

And for FireWire-bolstered G3s, check out Mactell's new **FirePower FireDrive** hard drives. They're available in 8, 10 and 14 GB capacities, for \$500, \$700 and \$900, respectively. LaCie, 503-844-4500, [www.lacie.com](http://www.lacie.com) MacTell, 888-622-8355, [www.mactell.com](http://www.mactell.com)



# See Me, Touch Me

**I**f you're the touchy-feely sort, you may just like **Troll Touch's** new touchscreen system for the iMac. The TouchStar system fits right over the screen and plugs into your USB port. You can do anything you'd do with the mouse by touching the screen. Even double-clicking, multiple selections and click-and-drag operations are within the \$595 system's bailiwick. Troll Touch has been making Mac touchscreens since '91; many of its products are used in public kiosks, where setting up an entire system is impractical. Educational and special-needs discounts (for users who are physically unable to use standard keyboard and mouse setups) are also available. Troll Touch, 805-257-1160, [www.trolltouch.com](http://www.trolltouch.com)





# Scan-0

**P**ick up a scanner, and the world of printed materials becomes your digital oyster. Photos, drawings, or text can be yours to embellish upon, combine, edit, and otherwise manipulate to your heart's content. Gather your own clip art from the world at large, and share your creations via e-mail and the Web. And though some are huge machines that cost hundreds of thousands of dollars, scanners, even pretty good scanners, are getting about as cheap as your average waffle iron these days.

Whether you're a professional graphic designer or you just want a quick and easy way to get documents into your Mac, whether you've got a blue-and-white G3, an iMac, or a PowerMac

Performa 475, there's a scanner with your name on it. We looked at 10 scanners, each for under a thousand dollars.

## Meet the Scanners

On the more humble end, we looked at the **SlimScan C6** (\$99) and **ScanMaker X6** (\$129), both from Microtek, and the **Astra 2000U** (\$129) from Umax. The SlimScan C6 is, as its name implies, quite slim indeed, to the tune of only about three inches high. Aside from that, it's your standard, letter-sized flatbed scanner. The ScanMaker X6, for an extra \$30, gives you enough elbow room to scan legal-sized documents. It also sports a "Go" button on the outside of the scanner, with which you can instantly call up

the scanning software and begin a scan. But one caveat about the X6: If you use this scanner with an iMac, you will need more than the recommended amount of RAM. It could be that Microtek will have solved this problem by the time you read this, but when I tried this scanner out with an iMac outfitted with 32MB of RAM, it was like a ride in a bumper car — crashes every 10 seconds (I conducted all of my USB scanner tests with a blue and white G3). The Umax 2000U is very similar to the 1220U that we reviewed in December of 1998. It's a letter-sized flatbed that comes in a sturdy squarish shell with a nice, large, flat cover.

Moving slightly higher on the price scale, we took Artec's **1236 USB** (\$146)

Olympus ES-10 Film Scanner



ScanMaker X6



Epson Expression 800





# Rama

Which Scanner Is Right for You? ————— By David Weiss

and **Epson's Perfection 636U** (\$229) for a spin. The Artec 1236U is quite a zippy looking machine. Having jumped on the translucency bandwagon (see this month's The Finder) Artec has decked out this baby in (partially) see-through iMac colors. Of all of the USB scanners reviewed here, the 1236U is the only one that needs no power cord; it draws all of the electrical power it needs from the USB chain.

The Epson 636U is your basic letter-sized scanner. It's the USB cousin of the venerable Perfection 636 (the SCSI version), reviewed in February. Along with a "Go" button, it also has an on/off switch, which is a nice if not terribly crucial feature. But the most remarkable thing about this scanner is that it pro-

vides an incredibly high optical resolution for the price, 600 x 2,400. Optical resolution refers to the number of places the scanning head can receive information from the light bouncing off of your source image. It can capture 600 pixels in one direction, and 2,400 in the other.

Obviously, the more pixels, the richer your scan will be, but resolution doesn't tell the whole story — scanners of the same resolution can still produce much different results, because scanners have varying degrees of sensitivity. Nonetheless, resolution still gives a basic indication of a scanner's powers.

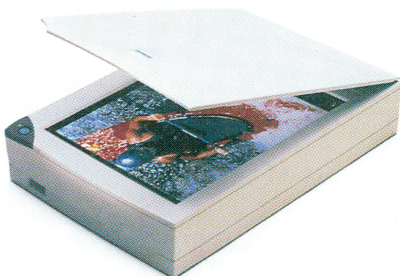
So far, all the scanners mentioned use USB. For those of you seeking SCSI scanners in that range, *MacHome* recommends the Umax Astra 1220S (\$199).

On the higher end, we looked at Agfa's **DuoScan T1200** and the Epson **Expression 800 Executive**, both of which cost \$699. These both use the SCSI interface. (You won't find any USB scanners on the higher end, probably because USB can't support the throughput of SCSI.) The Agfa T1200 is a highly unique machine in that accommodates both paper and transparencies (slides, film, etc.) without your having to purchase an additional adapter that goes on top. Instead, you pull out a drawer, plunk down your slides (very carefully, of course), and scan away.

The Epson Expression 800 Executive is a robust and ready all-around scanner. It comes in two other configurations: the 800 Artist (\$799) and the 800 Professional (\$999). The Executive is the base model; the Artist has a beefier software package; and the Professional adds a transparency unit. This is a solid unit that bolts on and swings open and shut, unlike the Epson 636's transparency unit, which rests on top of the glass. Also, once you install the transparency unit for the 800, it accommodates regular prints without switching lids.

We also tried out two slide scanners,

Epson Perfection 636U



Microtek ImageDeck





the Olympus **ES-10** (\$399) and the Polaroid **SprintScan 35/LE** (\$849). The ES-10 from Olympus is small and square, about as big as a loaf of bread, and you slip slides into the top after placing them in a caddy. It can also accommodate other forms of transparent media, such as negative or positive film. Polaroid's SprintScan 35/LE is similar, though it's much more expensive. Rather than using a caddy to add slides, you place them directly into a slot in the scanner. It can also take a strip of slides. Slide scanners can scan at very high resolutions and provide much better sharpness, because you don't have to position the slides manually on a piece of glass, in which case it's hard to keep the slides perfectly straight.

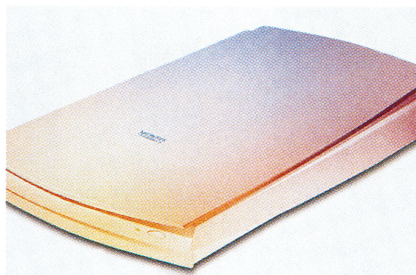
Finally, we couldn't resist trying out Microtek's **ImageDeck** (\$499), a scanner that works without a computer; it scans documents directly to floppy or Zip disk. Pop a document under its lid, push a few buttons for a setting or two, and press Start, not unlike a copy machine. When it's done scanning, it saves a file to disk — it's got one drive for each. And like a copy machine, you can set up the ImageDeck in a busy environment such as a school, an office, or a large, sprawling, family home, and allow people to scan at will and take their data back to their own computers — whether they're on a Mac or PC. It saves the files in PC JPEG format, which Macs can read. Unfortunately, it only saves scans in this file format, which is fine for the Web but is less than optimal for print, for which the TIFF format is much more appropriate.

## Imaging Power

Many factors comprise the overall image quality that a scanner is able to provide. Resolution is the most basic one, and this translates into image detail. But consider this: You probably won't be able to tell the difference between, say, a 1,200 dpi scanner and a 2,400 dpi scanner, if you're scanning at the same size and resolution. The way to really appreciate the difference is to scan at high resolutions, then zoom in very close to a detail of a photograph, enlarging it by a substantial amount. The higher the reso-

lution of the scan, the more detail you will be able to capture, and the larger you will be able to blow the picture up without its appearing blocky with pixels. For professional graphic designers, smooth-looking images are the be-all and end-all, and for the rest of us, well, the higher resolutions afford a much greater degree of creative freedom.

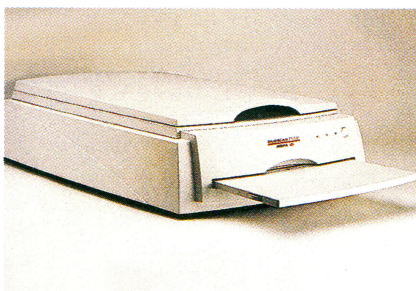
Take out a 5-dollar bill and look at the front, at the picture of Abraham



Microtek SlimScan C6



Polaroid SprintScan 35/LE



Agfa T1200

Lincoln. Look at the border surrounding the picture. Does it look like a line? Look really closely, and you'll see that there are words there, but if you don't know what they are, you probably won't be able to read them. This is my most brutal hands-on test of a scanner's attention to detail — not only are the letters smaller than the period at the end of

this sentence, but the type is also curved, so they're more difficult for a linear process such as scanning to render with precision.

To pick the two extremes, the Epson 800 was able to capture the text very well, to the extent that space is clearly visible inside each of the letterforms, whereas the SlimScan C6 offered up blocky, closed-up letters, many of which were unintelligible. This is not surprising. I did this scanning test at a resolution of 2,400 dpi, which is far above the maximum hardware resolution of the C6. Faced with the challenge, this scanner, and the others with hardware resolutions under 2,400 dpi, made use of a "cheating" scheme that goes by the techy moniker of "interpolation," in which the software adds in extra pixels where it feels they ought to go, in order to simulate a higher resolution than the hardware allows.

Second to the Epson 800 in the minute-detail test was Epson's other contender, the 636U; followed by the Astra, which provided very fine detail for its relatively low price tag; then by the Artec 1236; the DuoScan T1200; and the SlimScan C6 and ScanMaker X6, whose performance was about the same in this respect. Conspicuously out of place in this race was the T1200, which, for the price, delivered not a very healthy amount of detail.

In terms of overall color quality across a variety of tests involving whole photos, enlarged details of photos, and printed graphics with various sizes of colored and black text, the scanners performed about as expected relative to price. The Epson 800 came out on top; followed by the T1200; the 636U; the Artec; the Astra; and lastly by the two Microteks, the C6 and X6, whose performance was very similar. There was one exception: the ImageDeck, although it costs more than the Epson 636U, was only able to capture about as much subtlety of color as the C6 and X6.

For scanning transparencies, as far as the conventional flatbed scanners, the T1200 stood head and shoulders above the Epson 800, whose scans came out consistently muddy and a bit soft. This is surprising, especially because the



transparency option for the Expression 800 brings the price tag up to \$999. The dedicated slide scanners provided much better results than either flatbed, in terms of sharpness and vividness of color. But of the two, the much less-expensive Olympus perhaps looked even a tad better.

In terms of OCR (optical character recognition), most of our scanners behaved about the same (the transparency scanners and the ImageDeck didn't participate in this event), but the Expression 800 was able to capture a substantial amount more of extremely hard-to-read text of varying sizes, colors, and styles. The Epson ships with two drivers, an Epson driver and a SilverFast driver; the Epson one is supposed to be better for OCR and line art while the



Umax Astra 2000U



Artec 1236U

other is supposed to be better for photos. And in fact, the Epson driver did enable me to recognize more characters.

### The Speed Factor


Taking note of the time it took for each of the scanners to produce the above tests, as well as the time it took for each

scanner to produce a preview of the scanning area, I got a few surprising results. Leaving out the ImageDeck and the two slide scanners for the moment, the fastest scanner overall was Microtek's X6. Next came Epson's 636U, followed by its Expression 800, Microtek's C6, Agfa's T1200, and the Astra and the

Scanner	Price	Rating	Max. Optical Resolution	Main Distinguishing Features
<b>1236 USB</b> Artec 510-739-0800 www.artecusa.com	\$146	★★★★½	600 x 1,200 dpi	Groovy translucency, needs no power cord
<b>Astra 2000U</b> Umax 800-562-0311 www.umax.com	\$129	★★★★	600 x 1,200 dpi	Easy-to-use driver software for beginners
<b>ES 10 Film Scanner</b> Olympus 800-645-8130 www.olympusamerica.com	\$399	★★★★	2,400 x 1,600 dpi	Scans transparencies only
<b>Expression 800</b> Epson 800-463-7766 www.epson.com	\$699	★★★★½	800 x 3,200 dpi	Excellent at capturing fine details
<b>Image Deck</b> Microtek 800-654-4160 www.microtekusa.com	\$499	★★★	600 x 600 dpi	Needs no computer
<b>Perfection 636U</b> Epson 800-463-7766 www.epson.com	\$229	★★★★½	600 x 2,400 dpi	High resolution for the price
<b>ScanMaker X6</b> Microtek 800-654-4160 www.microtekusa.com	\$129	★★★★½	600 x 1,200 dpi	Extended bed for legal-sized documents, very fast except for previews
<b>SlimScan C6</b> Microtek 800-654-4160 www.microtekusa.com	\$99	★★★★	600 x 1,200 dpi	Very, very slim indeed
<b>SprintScan 35/LE</b> Polaroid 800-343-5000 www.polaroid.com	\$849	★★★★½	1,950 x 1,950 dpi	Scans transparencies only
<b>DuoScan T1200</b> Agfa www.agfa.com 888-281-2302	\$699	★★★★½	600 x 1,200 dpi	Contains pull-out drawer for transparencies



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**MacHome**

Artec, which were tied for the slowest. However, looking at just preview time, that is, the time it takes the scanner to show you what the whole of your image looks like before you crop it and scan at your optimal settings, the X6 came in fifth, at 28 seconds, a pretty long time for a preview, compared with the Epson 800's sprightly eight-second preview. But the T1200's average preview time was an agonizing 47 seconds — way too long just to see where to draw your marquee.

The ImageDeck was very slow overall, taking three minutes and 20 seconds to scan an 8-1/2 x 11 piece of paper at 300 dpi, compared with the X6, which scanned that puppy in a mere 52 seconds. Because the slide scanners couldn't compete in every race, I couldn't mix them into the blend of data. But a few items to note: They each take about 40 seconds to scan a slide at 2,400 dpi, which is an acceptable amount of time. But Olympus' ES 10 cranks out its previews in 6 seconds (*sweet!*), whereas Polaroid's SprintScan takes 31 seconds (*yawn*) because it draws each slide down into its belly each time it does a scan.

#### Who's Driving?

All scanners come with a bundle of software, and most of it is well known, (albeit limited) editions of big, powerful applications such as Adobe Photoshop and PhotoDeluxe, for image-editing; OmniPage for OCR; and other utilities for managing your images.

But the big mystery is the driver, the software that controls the scanner. One of my pet peeves with driver software is that with some drivers, when you zoom into an image that you want to scan, all you get is big pixels. What good is that? Highly useful is a driver that will zoom in and show you the detail. The Epson drivers can do this, but the others cannot, and this makes both Epson scanners much more useful.

The Umax driver is very good for beginners; it has all the tools laid out in a colorful, visual interface organized by project: Web image, printed document, OCR, etc. The Artec driver is very rough. It doesn't have any zoom at all, and it's got weird little glitches, such as, the progress bar doesn't do anything — it just displays

a white bar until the scan is done. The SilverFast driver that comes with the Epson Expression 800 Artist and Professional is highly sophisticated, and will no doubt provide you with endless tweaking pleasure.

Though the ImageDeck cannot be said to have "drivers," since it doesn't use a computer, its controls are along the front of the ImageDeck and serve a similar function. I found them to be highly inflexible. The ImageDeck gives no indication of progress, and when scans take a long time, which they will at 300 dpi and above, it doesn't beep when done, which would be a nice touch.

#### Scan Away!

For less than \$200, the Microtek ScanMaker X6 is an good value. For the money, it's the fastest scanner in the bunch, except when doing previews, and its large bed can accommodate larger paper. Bear in mind that you'll need a healthy dose of RAM. The letter-sized SlimScan C6 is perfectly adequate in all areas, and for only \$99, it could make a slick-looking addition to your desk.

The Astra 2000 is a fine scanner. Even though it's slower, beginners will prefer it to the X6 because of its extremely user-friendly driver and impressive detail capture for the money. The Artec 1236 USB looks good, and it needs no power cord, but its driver is very rough, which makes it much more difficult to use.

For a bit more money, the Epson 636U is a very good value indeed. You'll get great driver software and excellent detail for the money.

On the higher end, the Expression 800 is a better overall scanner than the DuoScan T1200, but the T1200 is much better at scanning transparencies, and its drawer makes it very easy to use. The ES 10 came out a tad ahead in image quality over the SprintScan, and because of its much lower price, this seems a great way to go for transparency scanners.

The ImageDeck is certainly convenient if many people need access the same scanner, but it's very slow and inflexible, and because of this I found it very difficult to use. Its high price would also inspire me to come up with another solution to scanner sharing. **III**



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# Beginner's Guide to Working with Graphics

by Max Frischman

**W**ith great power comes great responsibility, a wise man once said. That's exactly the case with the desktop publishing revolution — we now have these speedy computers and the software that enables us to put together everything from a business card to an illustrated catalog of fine art (or just a letter with a few nice pictures).

It can become complex pretty quickly. There are, however, a few basics you really should know — ones that will make your life as a graphics maven-to-be a lot easier. In the interest of world peace (or at least yours), we offer the following information and tips to help you along the way.

## Vector, Raster, What's the Diff?

There are basically two types of graphics programs, as there are two ways to draw a straight line. Either you can tell the application, "Put pixel 1 here, pixel 2 there," and so on, listing every single pixel's position and color, or you can say, "Start here and end there," and define the style and color of the line. Both lines get drawn, but through different processes.

This reflects the two categories of drawing programs. Bitmap or raster applications paint the screen pixel by pixel. These store image information as a comprehensive description of the position, color, and other attributes of each pixel in the image. If you zoom in, you can see the individual pixels (see **Pixel1** and **Pixel2**). Adobe Photoshop is the leading example of such an application, but painting programs such as MetaCreations' Painter also work with bitmaps.



Adobe Illustrator and Macromedia FreeHand, on the other hand, are vector-based applications. The images they create aren't described by individual pixels but by mathematical descriptions of lines (vectors are lines with specific length and direction). They are resolution independent, which means that no matter how far you zoom in or out, the lines will always look smooth (**Vector1** and **Vector2**).

Bitmap applications offer a reasonably straightforward method of creating images. These are also best used when editing or color-correcting images, such as a photographs. Problems arise when you switch resolutions; as we've seen, things can get jaggedy pretty quickly. You'll want to use higher-than-screen resolutions (see below) if you're planning to print out the image, but beware: File sizes increase exponentially with resolution.

Vector-based applications sidestep the issue of resolution, but they can be counter-intuitive to work with. To build a shape, you adjust "handles" that control the curvature of a line. It can take a while to master. Vector-based programs, however, are often the best choice for drawing line art such as cartoons, graphics, or titles.

It is possible to rasterize a vector image for use in a pixel-based program, though doing so causes that image no longer to be resolution independent. Similarly, most vector programs can take a bitmapped image and create outline paths, or a vector-based version of the image. As a result, you can combine effects and images that could only be created in each type of program. Some applications, such as Deneba's Canvas 6, handle both bitmap and vector formats within the same image.

### Remember Your Resolutions (and File Sizes, Too)

Resolution isn't such a big deal when working with a vector-based program, but when you're working with a bitmap application, be careful.

Resolution is a measure of the number of pixels per linear inch (ppi). The more pixels an image packs in, the higher the resolution and the sharper the image

looks. Think of each pixel as a unit of image information. Accordingly, the higher the resolution of the image, the larger the file size will be when you save it.

If you're making images for the Web, you'll want the image to be at screen resolution — 72 ppi. If you're



A **bitmap image** at normal magnification (Pixel1, above) looks fine, but zoom in on it (Pixel2, left) and you'll see jaggies.



A **vector image**, however, looks smooth no matter how much you zoom in on it (Vector1, above, and Vector2, left).

planning on printing out the finished work at its full size, your image resolution should be twice the printer's line-screen value, which is measured in lines per inch (lpi). It's best to check your

ing out about dpi versus ppi — don't. Pixels are what your computer screen displays, and dots are what a printer deposits on the paper.

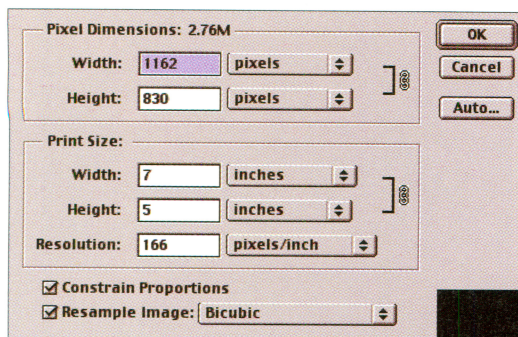
One thing to watch out for: If you change resolution in Photoshop with the "Resample Image" box checked in the

## Vector-based applications sidestep the issue of resolution, but they can be counter-intuitive to work with.

own printer's manual for its lpi, but a good guide is that a 600-dpi (dots per inch) printer has a line screen value of 85; this means your image resolution should be 170 ppi. Unfortunately, it's not directly proportional — for example, a 1,200 dpi printer has a line screen value of 105. By the way, if you're freak-

Image Size dialog box (**ImageSize**), Photoshop will add or take away pixels from your image. Let's say we have a 5-inch x 7-inch image at 166 ppi, weighing in at 2.76MB. If we take it down to a resolution of 72 ppi with Resample Image checked, we'll get an image of the same dimensions, but with lower resolu-





If you check the “Resample Image” option in Photoshop’s Image Size dialog box (ImageSize, above), an image’s file size will shrink when you resize it.

tion and only a 532K file size. Now, this may be what you want, but be warned that you won’t be able to go back up to a higher resolution without some image quality degradation — you’ve lost a good deal of information (pixels), and the lower file size reflects that. However, if we try the same resolution alteration to 72 ppi with Resample Image unchecked, we get an image with large dimensions — more than 16 inches x 11 inches! But because there are the same number of pixels, the file size is no bigger than its original 2.76MB.

## Master Your Masks

Masks are often the first step in creating advanced effects. If you’ve ever used masking tape to block off an area while painting something, you’re familiar with the concept (if you think about it, that’s how masking tape got its name).

Think of a mask as a super-precise selection; you can then manipulate the selection, everything except the selection, or use the selection to alter another image. For example, if you want to turn a dog blue (*BlueDogDone*) without coloring the whole photo, masks are a great way to go. You can also use masks to pick items out of one image and place them in others — if you want to make a picture of Aunt Wanda standing next to Nikita Kruschev, say.

Adobe PhotoDeluxe doesn’t have masking features per se, but its Smart Select tool can do a decent impression of them on occasion. If you use Smart Select to select an area of an image, you can delete the rest and place the selected

part in another image; you could swap people’s heads, say.

Photoshop gets more into masking — with more capabilities, but also more complexity. There are two ways to make a simple selection mask, which is the kind Photo-



To select objects for cool effects use a mask, as in this image (*BlueDog Done*, above). Then, you can turn that same selection into a path (*Path*, right).

Deluxe uses. First, use the Pen tool to create a path — click closely around the part you want to separate out. You can turn this into a selection via the path’s pop-up menu (*Path*). With this area selected, you can, for example, paint within the selection without worrying about going over the edges, or you can manipulate the dog or the background independently. You can also Select Inverse (Shift-Command-I) and delete the background; you now have a dog floating in space, ready to be placed anywhere you like.

You won’t be able to go back up to a higher resolution without some image quality degradation.

In Photoshop, there’s also a Quick Mask mode in which you can rough out a selection, and then touch it up by painting. First, make an approximate selection around the item, then click on the Quick Mask button in the Tools palette or press Q. Once in Quick Mask mode, you can either paint with black,

which adds to the red (deselecting parts of the image), or paint with white to select more — i.e., make more of it editable. This method gives you good visual feedback, and it can be less click-intensive than making a precise selection mask, as with PhotoDeluxe. For example, you can correct the fact that imprecise selecting cuts off the top of someone’s head by drawing in a few pixels in white. You can also paint in gray tones for fancy feathering of the mask, which produces a ghostly edge to the image.

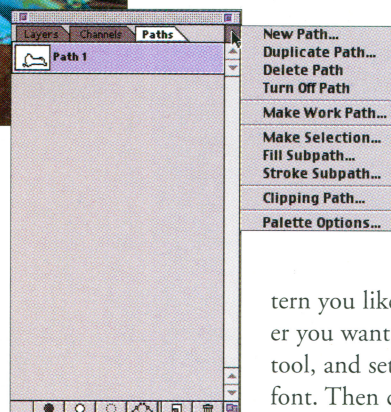
You can also make masks in vector-based applications, such as Adobe

Illustrator. Let’s try putting

a pattern inside some type; you can replace this pattern with any fade (i.e., gradient) or other pat-

tern you like. Write whatever you want with the Type tool, and set its size and font. Then create an object and fill it with your pattern

of choice — the easiest way is to select the item and click on the pattern in the Swatches palette. Place the pattern over the type (technically, the type is the mask, and the pattern is the object to be masked) and select both, with the pattern on top. The simplest way is to click on the type first, then hold down the Shift key while clicking where the pattern doesn’t overlap the type. It should look like the example (*VectorMask1*).



Then go to the Make Mask command (*VectorMask2*), and voila! — the result (*VectorMask3*).

## Become a Layer Player

Working with layers is like working on a pile of transparent sheets of tracing paper, except that you can draw on every



sheet and adjust each sheet's opacity and other attributes. You can place different items on different layers and fiddle with each without affecting the others.

For example, take a look at the guitar picture (**Layers1**). Originally, these items were in separate files. Photoshop and PhotoDeluxe automatically create new layers for each item pasted into a document. If I select only the guitar layer (selected layers show a little paintbrush in the Layers floating palette (**Layers2**)), any operations I perform, such as a motion blur, affect only that layer. If I'd selected the porthole's layer, the porthole would be blurred instead.

You can also use layers to place things "behind" or "on top of" each other. For example, I can put the guitar and porthole together (**Layers3**), but say I wanted the guitar to look as if it's inside the porthole. To rearrange items in separate layers, you can simply drag one layer up or down in the Layers palette; this works in Photoshop and PhotoDeluxe. There we go — the guitar's where it belongs (**Layers4**).

If you want to make sure the porthole hasn't cut off the guitar's neck, you can make the porthole layer temporarily invisible by clicking off the eye icon in the Layers palette. This is useful when the layers start piling up and you need to see one item clearly. There are a number of neat things you can do more easily with layers, such as combining effects, composing complex collages, and creating such special effects as drop shadows.

Some vector-based applications also feature layers, which are useful to separate out elements and manage complex images. You can also lock layers so you can't select them accidentally and displace a carefully aligned item.

Layers can also be used for tracing, as with a photo. To do this in Illustrator, go to the File menu, select Place..., and when you've located the image you want to trace, click on the Template option. This will give you a new layer (independent of what you want to draw) that is locked (you can't change it) and dimmed (so you can see your other work more clearly). Now you can either draw the image with the pen or pencil tool, or use the Auto Trace tool

— but Auto Trace works best only for simple shapes.

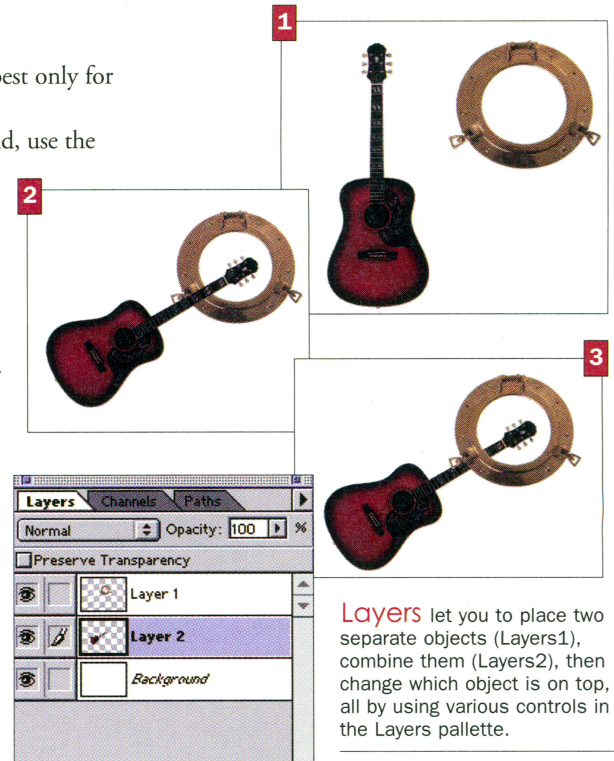
In Macromedia FreeHand, use the Import command in the File menu. As in Illustrator, you can draw over it yourself or you can use FreeHand's Trace tool — experiment with its settings to get the best results.

When you save a layered image, you might have to flatten it — that is, combine all the layers to make one single layer. When you reopen the file, you'll have lost all the special benefits of layers, so it's best to Save As with a new name.

## Channel Surfing

Photoshop handles all color images as composites of three or four versions of the image — if the image is in RGB mode, Photoshop thinks of it as one red image plus one green image plus one blue image. This corresponds to the three elements in each monitor pixel. A CMYK image is broken along Cyan, Magenta, Yellow, and Black (that's the K) versions; a professional printing press outputs from inks in these four colors.

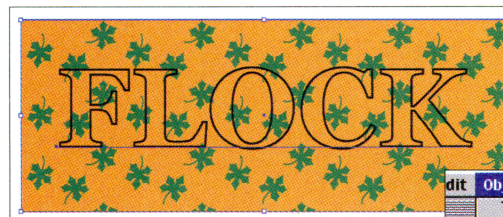
You can see these channels individually in, appropriately enough, the Channels palette, right next to Layers.



**Layers** let you to place two separate objects (**Layers1**), combine them (**Layers2**), then change which object is on top, all by using various controls in the Layers palette.

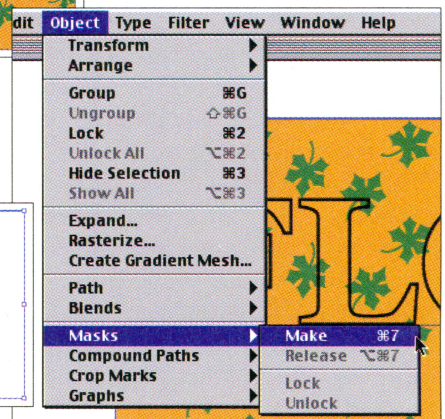
All channels are highlighted when you look at the full-color image. When you select just one channel, you'll see a grayscale image; in RGB, the light areas signify more of that color and dark less of it; that is reversed for CMYK channels. When you select more than one channel (Shift-click), you'll see a color image of the two combined. In the hands of the advanced channel surfer, channels can be used to make compelling color effects and correct the color of extremely messed-up images.

Practically, you can use channels to take care of some problems that may pop up in a scanned image. For example, if your scanned image looks out of



## Creating a mask in Illustrator:

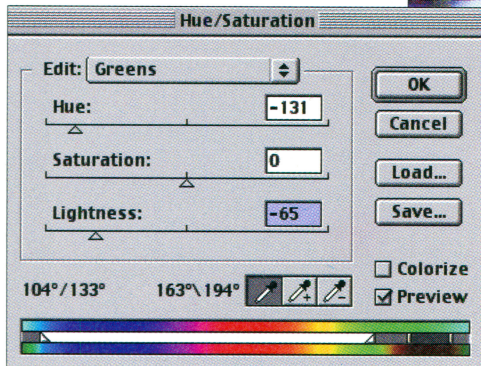
Combine text with a pattern, then use the Make Mask command to combine them (VectorMasks 1, 2, and 3, clockwise from top).







Simon's eyes look a little too spooky (Colors1, above), so they get a reality adjustment (Colors2, right).



focus even if it's as sharp as can be, it might be that one color channel is displaced — a closer look may reveal faint halos or shadows. Select the channel that's the same color as the halos; if that channel is indeed out of alignment, use the Move tool to nudge it back into its proper place.

### Get Correct — Your Colors, that Is

A common use of bitmap applications is to correct the color of scanned images or photographs. For example, you might be putting together a family newsletter, and the photo Cousin Ida e-mailed you of her brood makes everybody look a little green. Or perhaps the picture's so dark that you can't make out little Timmy's face in the back.

There are basically two ways to color correct an image — either by adjusting the colors themselves or adjusting the colors' attributes. Neither of these is mutually exclusive. If you don't want to tinker too much, PhotoDeluxe has an Instant Fix button in the Advanced area that gives you a one-click shot at clean-

ing up an old or poor photo. You can still make further adjustments to the image after using Instant Fix.

If you want to change a color — say, Cousin Felix is looking a bit chartreuse — you can change the image's

control (under the Image-Modify menu in Photoshop, under the Advanced-Quality tab in PhotoDeluxe) and taken care of it, much as one would on a TV. This would not have changed the mix of colors in the image.

You can also adjust the color balance of an image, which affects the whole image in terms of oppositional pairs: Red and Cyan, Green and Magenta, Blue and Yellow. This can take care of an image that has one color dominating, but you should be careful, since it's easy to lose track of what you've done. Look hard at the original and try to figure out first what needs to be done.

An easier way to work with color balance (though one that offers less-fine control) is through Variations, a feature in both PhotoDeluxe and Photoshop. Variations (under the Image-Modify menu in Photoshop, and under Advanced-Quality in PhotoDeluxe) gives you a matrix of choices that show what the image would look like with one variable changed — more red, brighter, and so on. You can keep clicking, and the application will keep making changes. Variations is a good tool in that it gives you visual feedback, and that you can backtrack just by clicking in the opposite direction.

HSB (Hue, Saturation, Brightness) values. Hue is the color, saturation is how much of the color (as opposed to gray) there is, and brightness (sometimes called lightness) is, well, how bright the color is. You can apply these changes to the entire image or to just a selection. In PhotoDeluxe, select the area you want to fix with the Color Wand tool, then click on the Hue/Saturation button under the Quality tab. In Photoshop, you'll find

## A common use of bitmap applications is to correct the color of scanned images or photographs.

these controls under the Adjust sub-menu in the Image menu.

In the photo of the cat (Colors1), Simon's eyes came out eerily viridescent. To save Simon from this state, I zoomed in and selected the green parts of his eyes with the Magic Wand tool, Shift-clicking to get all the parts. Then I opened up the Hue/Saturation controls and adjusted the Green settings (Colors2) until we still had color in Simon's eyes, but not so much as to be scary.

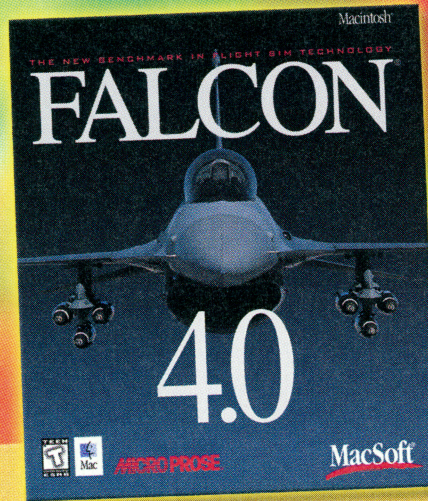
If the photo had been underlit, I could have used the Brightness/Contrast

### In the End

There's more, of course — much more. But once you get comfortable with the above, the rest should start to make sense.

So, what should you do next? Experiment. Play. Spend some time thinking about what you want to do before worrying about how you can do it. Remember, there are few "wrong" things to do in the world of graphics. You wouldn't be the first to discover something interesting just by wandering around. ■■■



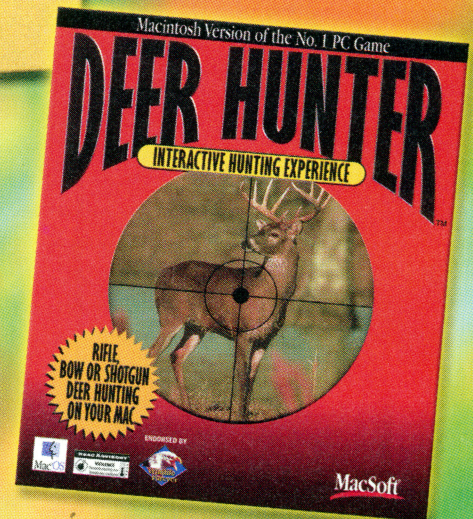
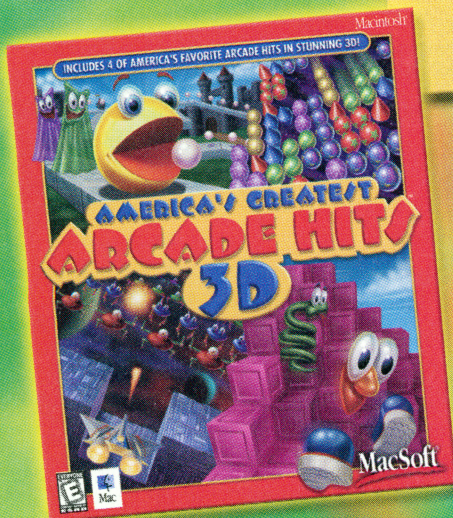
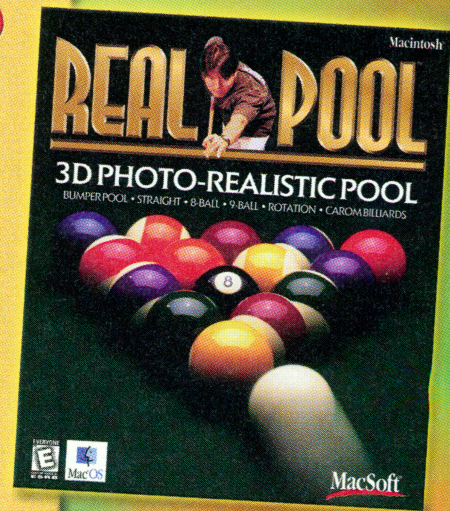


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By Alan Stafford

## Tips to Make **Your Website Dynamite**

It's the dangdest thing — old Fred down the block has a Website. You didn't even know he had a computer, let alone know how to work it. Now, you don't want to shown up by Fred and his basement-filling shotglass collection. You've got to show the wired world that you can keep up. We can help.

You can use anything to make a Web page, including a WYSIWYG (What You See Is What You Get) Web creator, a text-based HTML editor, or even a word-processing application, if you're brave. But each shares some common problems. The following are the most common obstacles you'll encounter when you're creating a Website.

Still, if Fred can do it, so can you.

### Polish Your Image

The images you put on your Website can make it or break it. If the images' file sizes are too large, the pages will take forever to download. If they're too ugly, though, your pages will look drab. You must manage certain interdependent factors to make images look good.

Use the proper format. For photographs, use the JPEG format, because it can display 24-bit (millions) color, giving pictures better depth and realism. Even if the people who visit your site can only display 16-bit (thousands) or 8-bit (256) color, they'll still be able to view the images. Pictures that are saved in 8-bit color look especially bad on 24-bit displays. Likewise, pictures that are saved as GIFs look grainy and flat.

However, for graphics — buttons, lines, and other nonphotographic elements — use the GIF format. Most times, the same image will be smaller as a GIF than as a JPEG, mostly because GIFs are limited to 256 colors. That's not important for most graphics, because when you create them, you can

choose the colors you want to use, and you can limit the number of colors to limit the file size. For example, if you create a red-and-white button, you can choose a single red color from an HTML-safe color palette (many Web-savvy graphics applications have these). You can't — or shouldn't — choose the colors used in a photograph.

The other advantage that GIFs have over JPEGs is that GIFs can be animated. By combining several similar, static image frames into a single GIF file, you can create simple animations. If the frames have areas that are the same in each frame — say, the background — those pixels don't have to be redrawn for each frame, thereby minimizing the total file size. JPEGs can't be animated.

In many image editors, you can choose the quality level of a JPEG or a GIF. A “lossless” JPEG means the image hasn't been compressed at all, so the file size is quite large. Balance the image quality against the file size: A 3-inch x 5-inch JPEG looks just fine at around 50K, but you can often shrink that size by half. If you have several images on a page, consider how long the entire page will take to load. Many Web tools will measure how long it takes to download an image or a page.

Another option: Save your JPEG images as “progressive” JPEGs. Instead of the images downloading from the top down, a progressive JPEG shows a low-quality preview first and improves the quality gradually as it downloads until the image is complete. Enabling this option will increase the file size by a tiny amount — perhaps 5% — but it makes the page appear as if it's loading more quickly.

While you may be tempted to use high-resolution, high-quality TIFF, EPS, or PICT files, you should stick to JPEG and GIF formats. For one thing, the higher-quality formats mean much-larger file sizes, and your audience's displays won't be able to show a difference. Second, browsers can't display



such images at all — instead of displaying them on your page, they will probably download to your viewers' hard drives as files. A good technique is to scan your images at a medium-high quality; tweak the images to look good by adjusting brightness, contrast, and sharpness; then reduce the images' dimensions and quality as the last step. That way, you know how good the original image looks, and you can make better decisions about trading off image quality versus file size.

While you're converting files to JPEG and GIF formats, make sure you crop the images to the most important portions of the picture, then resize the images to the dimensions you're going to use on your pages; both procedures will shrink file sizes. Also, reduce the images' resolution to 72 dpi. A computer monitor can only display 72 dpi, so you don't gain anything by using anything higher. The only reason you might is if you anticipate people wanting to download them to their hard disks for subsequent magnification or printing, in which case you should probably just e-mail them a high-resolution file or make the files available on your site for file downloading.

Other tips: Make sure to adjust the brightness, contrast, and sharpness of your images to be attractive on as wide a range of monitors as you can. While you might have a knockout 21-inch monitor, your viewers may be saddled with dim, fuzzy, old 14-inch tubes. A good test is to look at your final images with your Web browser; just drag and drop the images onto an open browser window.

## Text Moves

For most purposes, you should implement text with your Web editor's text tool — you should type it directly into the page or copy and paste it, because this type of text creates a very small file size, and thus is faster to download. A Web editor can handle basic styles — the size, bold/italic/underline, and color.

However, sometimes text-heavy pages, even with many colorful images, don't look very polished. While with some Web editors you can specify the fonts you want

# A good test is to look at your final images with your Web browser.

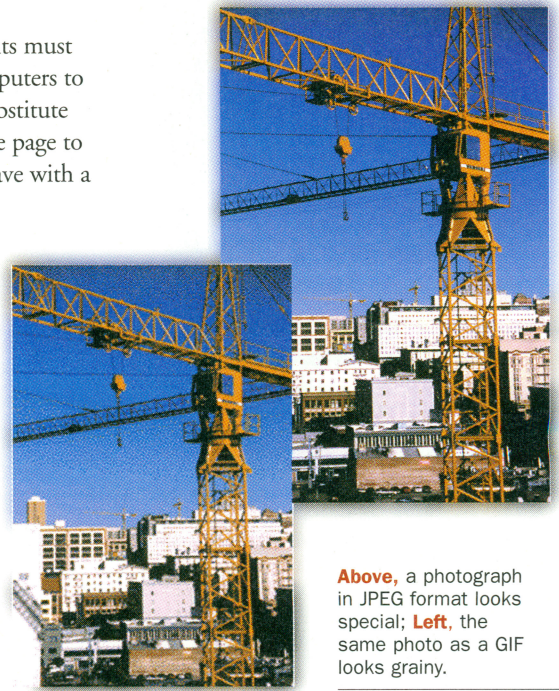
to be used on the page, those fonts must be resident on your viewers' computers to display properly. Otherwise, a substitute font is used, which may cause the page to look even uglier than it would have with a default font.

A solution is to create text graphics in an image editor and save them as GIF or JPEG images. If the text is a graphic, you can use any font you want, in any size or color you want, stretched, squashed, or with shadows or bevels. Bear in mind that one single-word graphic can carry a larger file size than an entire page of plain HTML text, so use them judiciously. Page titles are often a good use of text graphics.

## Play the Links

By far the most frustrating part of building a Website is creating and maintaining links — the directions to where files and other Websites are located. Even a single page with a few pictures involves several links, and it's tough to get them right, unless you take a few steps before you start making them.

Organization is key to link creation. Before you start creating a Website, create a few folders on your hard drive: a master folder for the entire site (e.g., Bob's Big Website), and within it an "HTML" folder, an images folder, and a graphics folder. You can also create subfolders for nested pages, old images, and works in progress. Whenever you create or download a new file for use on your site, put it in the appropriate folder. This advice isn't just to keep you neat; if you have files scattered all over your hard drive, all of your links



**Above**, a photograph in JPEG format looks special; **Left**, the same photo as a GIF looks grainy.

will have a different path (directions to where the file is) and you'll often forget to upload the right files to your ISP's Website.

You should also decide beforehand whether you'll be using "absolute" or "relative" links. Relative links are links that depend on their position within other folders, while absolute links are links that don't depend on where they are to determine the correct link. For example, [www.machome.com/images/petpictures/chuck.jpg](http://www.machome.com/images/petpictures/chuck.jpg) is an absolute link: A browser will be able to locate the image no matter where the page is. You might want to use absolute links if you use the same images on several different pages, so you can copy the links from one page to the other without changing them, or if you have an active site in which you move things around often.

However, certain WYSIWYG Web editors won't display images if you use



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**Left**, using text as a graphic  
makes a big, bold statement.  
**Below**, straight text looks just  
plain wrong.



absolute links — you won't  
be able to see what's going  
on. If you drag a picture  
from the Finder onto the  
Web editor's layout page,  
the application will create a  
relative link because it's giving directions  
to the image on your hard drive. The rel-  
ative link might appear in your Web edi-  
tor as ../petpictures/ chuck.jpg. If you  
manually modify the link to be absolute  
— the path it will take once it's on your  
ISP's server — the images will disappear  
from your layout.

Despite the viewing problems, absolute  
links are often less problematic. For one  
thing, if you're often typing in links man-  
ually, inevitably you'll forget part of the  
path. And if you later move the HTML  
page that has the link to the chuck.jpg

the difference between upper-case and  
lower-case letters in links, most are pretty  
fussy about them. If you have one char-  
acter in the wrong case in a long string,  
the link won't work. To prevent such  
hair-pulling frustrations, decide before-  
hand to make your links all lowercase, or  
in some other consistent style, such as  
capping the first letter of each file, so  
you can remember it for each file. If  
you're designating several links, you  
should be able to copy and paste the first  
part of the link into the editor's link  
inspector then add the unique file name,

**An absolute link won't  
change, so it won't break.**


image, you'll have to update a relative link  
or the image won't work. An absolute link  
won't change, so it won't break.

Another stumbling block is often the  
perceived minor difference between  
image location and link location.  
Beginning — and experienced — Web  
builders frequently combine the location  
of the image on the server with the the  
link — the Web page they want the  
browser to call up — when the image is  
clicked. That's another reason to organize  
images and HTML pages in different  
directories: It's easier to distinguish  
between them.

While some Web servers will ignore

or you can keep text clippings on your  
desktop that serve as shortcuts for the  
first parts of the links.

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Bottle Cap Collection!**

Regardless of the above advice, good  
Web pages are the result of much trial  
and error. Many a Web page is  
uploaded to an ISP's server, only to be  
tweaked, fixed, and uploaded again. But  
if you simply must show the world the  
stuff that's filling up your basement, the  
Web is the best way to show up Fred  
and the Joneses. 



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and take a few minutes to fill out our survey.

You'll automatically be entered to win software, hardware, and other great prizes!

Thank you,

Susan Ford

*Publisher*

Responses are confidential, and your name is used only for survey.

If you do not have Internet access, you may send a S.A.S.E. to MacHome, 703 Market St., Suite 535, San Francisco, CA 94103 for a ballot.



## Survey Says ...

### Market Research for the Home Business

If ever there was an entrepreneur who studied her market, I thought, it was my neighbor, Jessica. Every morning I saw UPS trucks come and pick up palettes of her bottled salsa, and in the afternoon she called distributors.

But how did she know what people actually thought of her salsa? “I put my phone number on the label,” she said. “It was the smartest thing I ever did.”

Some years ago that was revolutionary. These days you put up a Website and invite people to e-mail you. But don’t you hear mostly from the deeply dissatisfied and the insanely satisfied? What if you’d rather take your public’s pulse more systematically to watch trends, follow emerging perceptions, or spot problems before they get out of hand?

I sell cannoli at street fairs, and lately I’ve seen a slight downward drift in sales. But why? When the hit man in *The Godfather* uttered, “Leave the gun. Take the cannoli,” he’d breathed new life into the market for this ancient Sicilian pastry. Was the cannoli’s popularity now beginning to decline? How could that happen? Everyone still seems to love my cannoli. To my face, no one complains. But is it my cannoli? All cannoli? There were so many questions, but how to get the answers?

I called Tom Bershad, founder and CEO of MarketLab Research, Inc., a nationwide firm based in Philadelphia. Could he judge the cannoli market? Sure! Let’s see, a simple phone study, including analysis, would start at about \$15,000. Focus group? The normal price is about \$5,000, but for you ... (No, he

wouldn’t take cannoli as barter.)

Since I already have a few thousand customer e-mail addresses I’ve collected for my cannoli alerts, I figured there had to be a cheaper way to conduct my own market survey. And there was.

#### Survey the Scene

The iSurveys Website ([www.isurveys.com](http://www.isurveys.com)) lets you compose your survey online and put a link to the completed survey on your own Website. If you use this system, you’re spared the details of server and database administration — that is, a dedicated Internet connection such as DSL (as opposed to a dialup connection), and ideally a separate, dedicated Mac set up for file serving. Quicker than you can say, “Holy cannoli,” I registered and set up a two-question survey (just to try it out).

The procedure could hardly have been simpler. After you register, you hit the button that says, “Proceed to set up a

survey,” which takes you to a screen in which you write your questions.

Completed surveys look slick and professional. After you compose your questions, they tally up the charges. I opted for a seven-day run, which would cost \$59. That’s \$25 for setup, \$10 for each question, and \$2 a day for hosting. For

an extra \$10, you can let respondents see a running tally of results.

At these fees, if I plan to be running more than one survey, I’m better off buying software and braving the setup on my own. Waves in Motion, the company that produces iSurveys, is prepared for people like me. It produces *The Dragon*, a desktop survey-making tool. Your completed surveys will look just like those in iSurveys.

If I do more than one or two surveys, I’ll save money with *Dragon*.

#### Enter the Dragon

Before you can make *The Dragon* breathe fire, you have to find its pilot light. Where is the starting point in this tangle of files and folders? Unlike most software these days, *Dragon 4.1* makes you hunt. But here’s a tip: From the documentation folder, open “quickstart.htm” in your browser. That seems to be where the developer wants you to begin.

Once inside, the survey-making procedure is easy and straightforward





(though you do have to overlook numerous typos). As with the iSurvey site, I was able to set up a good-looking survey in less than an hour.

Once into Dragon, I discovered the magic of “cross tabs.” This feature helps analyze results. Say that 57% of respondents indicated that they prefer hot dogs to cannoli. In the next moment I wonder: Is this why cannoli sales are down? Competition from hot dogs?

A moment later, cross tabs save the day. I compare this prefer-hot-dogs-to-cannoli blasphemy with another question in which I’ve asked how many times they’ve had cannoli. Quickly, my hypothetical panic turns to hypothetical insight. In my mental war game, I imagine that of the 57% who prefer hot dogs, only 10% have had cannoli more than once. But those who prefer cannoli over hot dogs, watermelon, and even life itself have had cannoli many times.

What does it all mean? In my stupor of relief and gratitude, I think it means that I don’t have to worry so much about those who prefer hot dogs. They tried cannoli once and may never again. The people I really care about are the cannoli repeaters.

Setting up a cross tab in Dragon is easy — just select two questions, issue a command, and the program produces a grid showing who answered what.

Dragon runs on FileMaker 4, which costs about \$200. But keep in mind that for Web surveys it also requires that you set up a server for FileMaker.

Though some features in Dragon seemed to work well, the typos and scattered feel of the product made me decide to keep looking.

### Power to the People

Though PowerKnowledge’s PowerTab lacks some of The Dragon’s charm, it makes up for it in sheer professional punch. It allows you to create Web surveys and supports manual entry if you’re moving the data from print, fax, or phone surveys. It also runs on just about any Web server.

PowerTab opens with the Expert Helper, which after asking you a series of interview questions tries to write your questionnaire for you. Since I prefer to

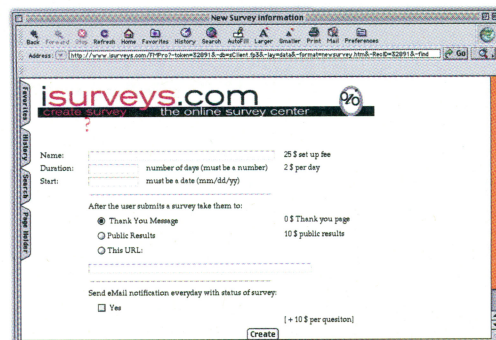
write my surveys myself, I instead plunged right into the Survey Editor. Setting up questions is almost as easy as in Dragon. Both give choices of single selection (“Have you eaten cannoli?” Yes or no.); multiple choice (“How many cannoli have you eaten in your life?” A) more than 100, B) 50 to 100, C) 1 to 49, etc.); or text answer (“Describe your first cannoli experience”).

Mysteriously, choices are made to look like titles, with most words automatically capitalized, so they’re a bit hard to read.

PowerTab also creates “rating scale tables,” which display a list of attributes to rate on a scale of one to five.

Once you’ve finished writing your questions, you can save your survey for the Web, printing, or both. And when you do so, the program walks you through a few essentials: Where will the survey be on your Website? Where will the Perl script, which controls the text-entry fields and other interface features of your site, be housed? This kind of hand-holding I don’t mind.

Once the results have poured in, the report section helps you figure it all out. The “simple” report gives the number of responses for each possible choice and automatically figures the percentage. It also gives the option to include the number and percentage of respondents who simply skipped the question altogether,



The iSurveys setup page makes it very easy to get your feet wet with Web surveys.

which is useful — perhaps the question or the given choices were unclear.

You can break results down further in PowerTab’s detailed reports, or “banners” (which are the same as Dragon’s “cross tabs”), so you can compare responses to one question with responses to another. The program breaks down responses into smaller subgroups for easier analysis. One of the handiest features I found was the ability to import FileMaker data to compare with my survey data.

But be careful how you wield this program’s power. For one thing, it lets you edit questions while your survey’s “in the field,” as the research pros say. This can skew the results, so if you’re tempted to make a change but many people have already responded, you might want to hold back and chalk it up to experience.

### To the Polls!

An even more sophisticated tool is ePoll, a Java-based Web survey. And as with

## Till No Stone Is Left Unturned

**T**om Bershad, founder and CEO of MarketLab Research, Inc., a nationwide firm based in Philadelphia, Pennsylvania, has a few tips for entrepreneurs trying to scope out new markets.

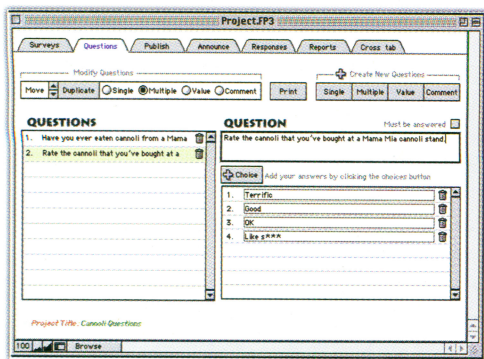
“A lot of people don’t realize that a lot’s available in secondary research,” he said. Secondary research is off-the-shelf data, as opposed to “primary” research, in which the results are proprietary.

- **Census data is free in many local libraries.** You might be surprised what you can find out from it.

- **Dun and Bradstreet offers a marketplace CD that lists much valuable data.** For example, you can find every corporate entity in the U.S. If you want to open a hat store, it can give you the listing of every hat store in a given area. The initial cost may seem high until you consider commissioning “primary” research.

- **Ask as many people as you can for their opinion.** “You can get a lot of information,” said Bershad. “It’s sort of the same thing we do on a cruder scale.”





**The Dragon** is a desktop program for creating your own surveys for the Web, print, or telephone.

Dragon and PowerTab, you'll need a dedicated connection with a Web server.

ePoll doesn't make you settle for taking respondents through just one list of questions, regardless of what responses each person gives. ePoll can change the questions based on each person's responses. If a respondent says she's never had cannoli, why annoy her by asking when she last ate one? Avoiding this improves her experience, making it more likely she'll actually complete the questionnaire. The program allows you to filter responses, so you can call up only the ones that meet your specific criteria. If you want to try it out, you can avail yourself of a free ePoll demo.

## Wish List

I had hoped that one of these packages would provide me with a tool for easily following up after a survey. This is usually important for pulling in good response rates. Your customers are busy, and sometimes they ignore your first e-mail. Many people won't respond until you remind them once or twice. That worries me. Many of my cannoli regulars enjoy a traditional lifestyle. They never hurry. Luring them into any kind of survey will take work.

Let's say I asked 2,200 people to come and fill out the survey, but only 150 — a measly 7% — have actually taken me up on it. It's a pain to remind the other 2,050 in Dragon or PowerTab without annoying the 150 originals. I would have to manually eliminate the 150 from the follow-up list, one by one. This would feel quite frustrating very quickly, and after a few minutes of that, I

might feel like leaving the cannoli and picking up the gun.

## Flight Check

As easy to use as all the software was, something nagged at me. Would I get the results I needed? What if my questions and the choices I offer skew the results one way or the other? Would enough people respond to the survey?

Here are a few quick tips in composing your questionnaire.

- Even if you have nearly as many of your customers' phone numbers as you have e-mail addresses, don't call them — it's just too much work. Besides, you want to stay on good terms with them and not risk being thought of

1 (Critical)	2	3	4	5 (Makes No Difference At All)
1. Please indicate the importance to you of each of the following.				
1. Filling of Sheep's Milk Ricotta, Not Common Ricotta or Other Ingredient. . . . .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Chopped Chocolate, Not Chocolate Chips. . . . .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Crisp and Flavorful Shell. . . . .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**PowerTab's rating scales** give you precise and subtle data.

as a telemarketer.

• Shoot for at least 300 responses. That's about where market researchers I talked to find that results get steady. Cross tabs require even more total responses, since the data is sliced and diced into smaller chunks.

- Make sure each question and each choice are crystal clear.
- Make sure your questions and choices are as neutral as possible. Don't suggest choices.
- Keep it brief. Make every question count, and try to keep it to 10 questions or fewer. Everyone's busy.
- Test your survey before you cut it loose on the public.
- If you need help with any aspect of your research — such as setting objectives, writing the questionnaire, analysis — inquire at a local business school or small business organization.

## Fielding the Survey

What do you do after the whole survey's prepared? You blast e-mail to the whole list, of course. But what you say in that

e-mail is important. First, always offer an incentive. It can be inexpensive, but not one that will skew your results. I'd love to offer cannoli coupons. Bad! All the cannoli fans would respond and no former fans would. Better to offer some other coupon, a lottery ticket, or simply a dollar bill. Contests are legally dubious. Remember to follow through. You should also make sure to give a deadline. It should give enough time to respond but not so much that people think, "Oh, I can do that later," and then forget. A good rule of thumb is five days. Also, try to keep it brief. Say please and thank you. Tell them that in such a small group, each response is important. Finally, tell how quick and painless it will be.

## The Results Are In

No wonder the pros get big bucks. But I'm not worried. My quick-and-dirty little survey will tell me much of what I need to know. All I want to do is offer people can-

noli they can't refuse. **MH**

*Ted Cuzzillo is a Point Richmond, California, writer, editor, and cannophilophile. He once spent 13 months writing questionnaires and collecting market research data in Silicon Valley.*

### iSurveys



\$25 set-up fee, \$10 per question, \$2 per day survey hosting, Waves in Motion  
www.isurveys.com

### The Dragon



\$189, or \$89 for Web-survey version only, Waves in Motion  
www.wmotion.com

### PowerTab



\$199, PowerKnowledge  
www.powerknowledge.com

### ePoll

Not Rated  
\$500 to \$4,000, depending on configuration, Senecio Software  
www.senecio.com



# Quick. Who Was The Second Pilot To Break The Sound Barrier?

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## The Viking vs. the Smart One

### Two 56K USB Modems Duke It Out

If you have a blue G3, you can either reach out to the outside world with an internal modem, or you can use an external USB modem. *MacHome* took two external models for a spin: the Viking Components 56K and the Best Data 56K Smart One.

#### Basics

The Viking modem sports a striking design, and although it's rather large by modem standards, it takes up very little room on the desk. Its lights are festooned along the front, where they're clearly visible from any angle. And with its blue and white color scheme, it looks at home sitting next to a blue G3. Best Data's Smart One is smaller and slimmer, and it rests flat on your desk with its indicator lights pointing upward. So it takes up more lateral space on your desk, but because it's flat, you also have the option of stashing it underneath the arches of your Apple Studio Display, if you have one.

Neither modem has a manual volume control, a feature that I find very handy. Still, you can control the volume of either modem by issuing commands from within the modem software. Also, if you prefer to not hear the modem at all, you can select Sound Off from your Mac's Modem Control panel. At their lowest settings, the Smart One was noticeably quieter than the Viking.

#### Speeds

Though the lines I tested these modems on were rated to be 56K capable, I was only able to connect at a top speed of 48,000 Kbps with either modem. Many factors contribute to this, including the density of traffic on the lines, and although it's difficult to isolate the many variables involved, connection speed can be due in part to the individual modem you're using. With the Smart One, I consistently connected at 48,000 Kbps, but using the Viking, I connected at 46,666 about half the time. Though this is but a small discrepancy, it was consistent across many separate dial-up sessions on different days.

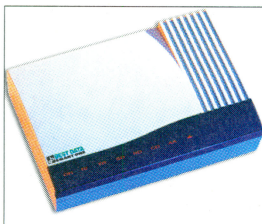
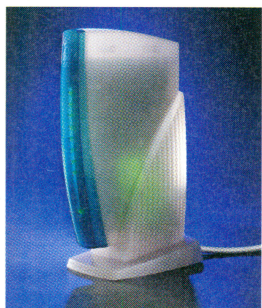
#### Software

Modems traditionally ship with some form of fax and terminal emulation software. With this, you can make direct modem hookups for downloading software, and also issue commands directly to your modem for doing such things as adjusting the volume. The Viking comes with MacComCenter, a suite of pro-

grams that handles fax, voicemail, and answering functions. The Smart One comes with a limited edition of FaxSTF and a small program called MicroPhone for data transmission. Although the packages for both of these modems are similar, with the FaxSTF package you have the option of upgrading to the much more robust FaxSTF Pro, which gives you advanced capabilities such as being able to broadcast faxes to a group.


#### The Final Decision


In terms of looks and design, I prefer the Viking. But the Smart One comes with more robust software, and it consistently connected at high speeds, so in the end, I'd favor the Smart One. Also, it's less expensive, and that doesn't hurt. **MM**



#### rating


Smart One 56K USB Modem  
\$100, Best Data  
818-773-9600  
[www.bestdata.com](http://www.bestdata.com)  
USB required


 Comes with great software, quiet, maintains consistently fast connection speeds

 No manual volume control

#### rating

56K External Modem  
\$120, Viking Components  
800-338-2361  
[www.vikingcomponents.com](http://www.vikingcomponents.com)  
USB required

 Takes up little space while providing clear visual feedback

 Sometimes connected at slightly slower connection speeds, no manual volume control

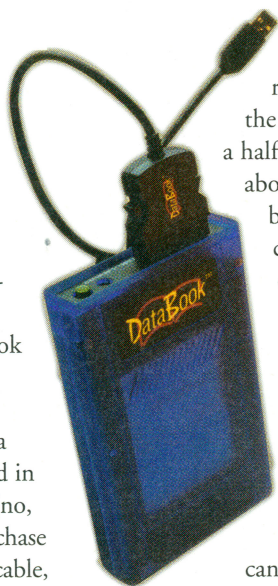


## DataBook

One of the weaknesses people harp on about the iMac is its limited options for external storage, particularly for non-networked users. Fortunately, some external USB hard drives are finally hitting the market; DataZone's DataBook is one example.

The DataBook comes in a wide range of sizes; we tried a 4200-rpm, 3GB drive housed in a translucent dark blue case (no, not iMac blue). You can purchase the drive with either a USB cable, which converts the IDE hard drive to USB, or with a PCMCIA converter cable, for use with PowerBooks. However, while DataZone says you can hot-plug the USB end of the cable, you can't hot-plug the IDE end.

The drive performed well, if not terribly rapidly. Transferring a 100MB folder from our Revision A iMac to the



DataBook averaged five and a half minutes; transferring the same folder back to the iMac averaged just four and a half minutes. That equates to about 333K per second, well below the USB pipe's theoretical limit of 1.5MB per second. However, transfers started immediately — no hesitation — and they chugged away with no stoppages.

You can even watch 320 x 240 video with no hiccups, though at full-screen it's too much of a challenge. DataZone says its drives can withstand the equivalent of a 30-inch drop off a desk onto the floor. So, with DataZone's encouragement, we dropped the DataBook repeatedly, and from much greater heights. Drops onto carpeting didn't faze the drive, though a shoulder-height drop onto the MacHome kitchenette's linoleum floor did cause the drive to shift inside its case. But when we

plugged it back into the iMac, everything worked fine.

The DataBook's manual boasts that if you forget to take the drivers CD with you, you can download them from DataZone's Website. But that's only true for Windows machines — the Mac drivers were nowhere to be found.

**The Final Decision** For iMacs, the DataBook is priced right and works well. But for blue G3s, you may want to consider the new FireWire drives, which are much faster. VST's 2GB FireWire drive is \$50 more than DataBook's comparable drive, but the VST 6GB drive is \$100 cheaper.

— Alan Stafford

<b>rating</b>	<b>iMac/G3 Compatible</b> 
<b>\$249 (2GB) to \$1,149 (14GB)</b> 888-660-8688 <a href="http://www.datazonecorp.com">www.datazonecorp.com</a> <b>USB required</b>	
<b>Takes a thrumming, keeps on humming</b>	
<b>FireWire will kick its rear</b>	

## Spring Cleaning 3.0

Spring Cleaning is a program designed to clean out the virtual dust bunnies hiding in the darkest recesses of your hard drive. While the program certainly handles the job, even in its third iteration Spring Cleaning still lacks the refinement normally associated with Aladdin products.

Upon double-clicking Spring Cleaning's application icon, you're greeted with a list of possible cleaning operations to run on your Macintosh. The program sports a dozen options, including FAT App Slimmer, which removes non-PowerPC software from PowerPC Macs and PowerPC software from non-PowerPC machines. It has a tool that finds those orphaned aliases (those that point to long-deleted



files and folders) and duplicate files (such as your twelve copies of SimpleText), and it has an uninstaller that removes unwanted programs along with their associated files. Spring Cleaning now includes a Restore option that allows you to undo changes that you've made, but beware: Once you've emptied the Trash, you won't be able to retrieve your changes. Considering the number of reviews that have pounded earlier versions of Spring Cleaning for its incoherent user interface, you'd think that Aladdin would have put considerable effort into cleaning up its act. Alas, the program still confounds. Even though Spring Cleaning now lacks many of its "Are you sure you want to do this?" dialog boxes, you're still required to select the action you want to perform from a menu and then click a button to actually

perform it. These steps could easily be shortened using a simple button bar. Also, the Orphaned Pref Remover often offered to remove preference files for programs I still had on my hard drive. So know what you're deleting and why: A misguided delete may lead to trauma.

**The Final Decision** There's no doubt that Spring Cleaning performs as advertised, scouring your hard drive to find and remove extraneous files. Unfortunately, the interface still lacks refinement and requires you be familiar with the files that need to remain on your hard drive — a potentially dangerous scenario for the uninitiated.

— Jeff Battersby

<b>rating</b>
<b>\$50, Aladdin Systems</b> 831-761-6200 <a href="http://www.aladdinsys.com">www.aladdinsys.com</a>
<b>Thins FAT files, locates and deletes duplicate files</b>
<b>Weak user interface, potential danger for novice users</b>



## Fireworks 2.0

A couple of months ago I lamented that while Adobe had released two new Web-graphics programs, it still took a combination of three programs to actually create a Web graphic from scratch. My lament has ended.

Fireworks 2.0 consists of a complete set of drawing tools with which to create Web-optimized GIF and JPEG files, rollovers, and GIF animations, and it lets you apply a multitude of standard and user-defined graphic effects, all using one piece of software.

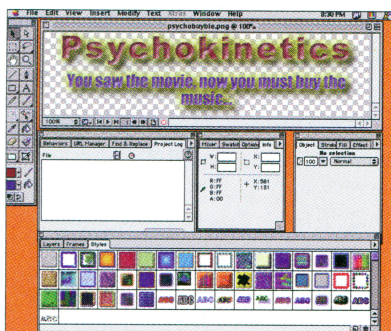
The Fireworks interface is not unlike other drawing programs you may have used. It sports 32 drawing tools, ranging from simple selection and text tools to pen, scaling, and polygon tools. Once

you've created an initial object, you can begin applying styles and effects. As you work, Fireworks immediately displays the changes. The program ships with 52 predefined styles but, because of the program's versatility, the number of styles available to you will only be limited by your imagination.

Fireworks' GIF animation tools are more difficult to master than those found in Adobe ImageReady, but this is because they're far more robust. But when

it comes to making animated GIFs, neither of the programs can hold a candle to MetaCreations' Headline Studio (see page TK). Creating rollover buttons with Fireworks is very simple. I was able to take a button, duplicate it, apply shadowing to give the effect of movement, and export it all as a rollover button in less than a minute.

When it's time to export your images,



Fireworks puts the nail in the coffin of any other Web graphics program. The export window allows you to perform a multitude of changes to your image while continuing to let you view the changes on the fly. The window allows you to view simultaneously four completely different versions of your image, and you can crop the image without backing out to the main program.

**The Final Decision** Fireworks is a complete pleasure, and it's amazingly powerful when compared to the multiplicity of programs normally required to create Web graphics.

— Jeff Battersby

**rating**

**\$199, Macromedia**  
 800-470-7211  
[www.macromedia.com](http://www.macromedia.com)  
**PowerPC required**

**Powerful image-editing program for the Web, takes the place of a multitude of more expensive programs**

**None**

## Apple Studio Display

What's the size and shape of an iMac, looks kinda like an iMac, but isn't an iMac? George Jetson's helmet? No, Apple's new 17-inch Studio Display. It's encased in blue-and-white plastic, with huge claw feet that elevate it about four inches above your desk.

It's large, but the feet mean you can put a few things underneath it. The color scheme and design may be a bit loud for some, but it does jibe with the blue G3.

The tube is one of Mitsubishi's best (though not one with a ruler-flat screen, as is the 19-inch model we reviewed in January, 1999). Maximum resolution is 1600 x 1200 at 60Hz (that's a little

low), but it displays 1,024 x 768 resolution at a nice 85Hz, so you won't notice any flicker. It's very bright, very crisp, and has excellent contrast. Color and brightness are consistent across the screen and in the corners.

The controls aren't so impressive.

With some Apple monitors, you can adjust height, position, pincushion, and what have you, in the Monitors and Sound control panel, using your mouse. The Studio Display's

controls consist of four buttons underneath the bezel and an onscreen display, and it's tough to get through the menus.

Because the tube is a Diamondtron aperture grille, the screen normally shows a couple of barely noticeable stabilization wires. Usually these aren't a problem, but the first unit we saw had about eight, quite visible wires.

Thinking it was defective, we returned the unit, but Apple's tech info library subsequently instructed owners of the Studio Display that the lines, which are caused by either cold weather or rough shipping, can be diminished with one or two good slaps to the side of the monitor! Fortunately, a second unit didn't exhibit the lines, so we didn't have to resort to violence. This time.

**The Final Decision** The Studio Display is priced competitively with other high-end 17-inch models, and it is a very nice monitor. And if you've got a blue and white G3, and you're the kind that won't go out in the morning unless your belt matches your shoes, this one's for you.

— Alan Stafford



**rating**

**\$499, Apple Computer**  
 800-538-9696  
[www.apple.com](http://www.apple.com)

**Crisp and bright display, looks great on the desk**

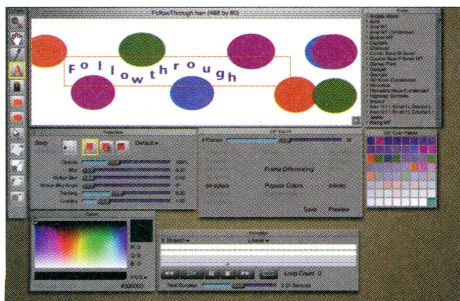
**Case is a bit large, difficult controls**



## Headline Studio

Imagine a GIF animation tool that lets you do more than simply blink a few images on your Web page. Then imagine an animation tool that gives you complete control over every object in your animation, allowing you to become a virtual Web Disney.

Think I'm drinking more than milk at lunch? Think again! Headline Studio boasts "Broadcast Quality Banners for the Web" and comes through with a product that will dance circles around any other GIF animation tool on the market — literally. The key to Headline Studio's power lies in the absolute control the program gives you over everything in your animation, right down to the individual letters



in words. To these objects you can apply fades, blurs, twists, springs, bounces, shadowing, and a multitude of other effects. These effects, when used in combination with each other, can give your animation a sense of real, fluid motion. Don't like one or two changes you've made to your animation? Headline Studio allows you to undo an infinite number of changes. You can also easily adjust the number


of frames and duration of your animation "on-the-fly" without degrading the quality of the final image — a feature that leaves every other program of its ilk in the dust.

But while the animations you create with Headline Studio can't be matched, learning to use the program is a bear. The tutorial is abysmal, and the user guide is an instant recycling bin item. The application makes liberal use of


such terms as "Tight Spring," "X-Location," and "Sample and Hold" without clearly defining them. Also, there's no online help, so you're forced to play a digital "hide-and-seek" in order to learn the program. But once you get past that, you'll discover that you possess an extraordinary program.


**The Final Decision** Headline Studio is likely to set the standard for future Web-animation tools. Unfortunately, the program's significant learning curve and lack of sufficient documentation tarnish what would otherwise be the most excellent program of its kind.

— Jeff Battersby

**rating** 

**\$249, MetaCreations**  
805-566-6200  
[www.metacreations.com](http://www.metacreations.com)  
PowerPC required

 Excellent product, small footprint, high-quality GIF animations

 Substantial learning curve, poor documentation

## Que! CD-RW Drive

QPS's amusingly named Que! CD-Rewritable (CD-RW) drive (roughly translated from Spanish, the name means "What!"; pronounce it "Kay") is a viable and even somewhat stylish solution for iMac and blue-G3 owners. Just don't expect blazing speed.

Not that CD-R (CD Recordable) or CD-RW (CD Rewritable) drives and blazing speed are often mentioned in the same breath anyway. These drives have a painstaking, thankless job of arranging zeroes and ones for a laser to read, and they need time to do their work. The fastest ones so far can write data at eight times the normal read speed for a CD-ROM — those are referred to as 8X drives. Que is basically a 4X drive, but for some tasks, such as recording audio, it can only work as fast as 2X.




The drive can write to either CD-R or CD-RW media, and many folks are understandably excited about being able to reuse media. Be aware, however, that CD-RW media won't necessarily work in other CD or CD-ROM drives. It uses a relatively new optical technology for recording data, and it requires specific equipment in the drives for both recording and playback. Some of the newer drives will read CD-RW media, and some won't. Check with the manufacturer for compatibility.

That said, the Que! is a good little soldier, and it has a soothing, albeit bulbous, iMac look. The speed of the USB bus makes it a tad poky when recording audio data. QPS says it will work at 1X or 2X speeds for audio, and our experience confirmed this. Trying to author a CD at 4X resulted in an error, but 2X worked swimmingly. Recording standard Mac files and folders as data worked well at 4X.


QPS bundles the drive with version 3.8 of Adaptec's Toast CD-authoring software. Good thing, because 3.8 adds USB support — earlier versions won't work. At press time, the company predicted USB support in mid May for Adaptec's CD Direct authoring program and Jam professional audio CD-recording software as well; USB versions of these will likely be ready by the time you read this.


**The Final Decision** The Que! drive comes in a stylish package and does its job well. And its included carrying case makes it a good portable solution for writing CDs over USB.


— John Poultney

**rating** 

**\$299, QPS Inc.**  
800-559-4777  
[www.qps-inc.com](http://www.qps-inc.com)  
USB required

 Reliable performance, good software, comes with case

 A bit slow for some tasks

**iMac/G3 Compatible**  




## Kai's Photo Soap 2

What have you done with all the images from the digital camera you got over the holidays? And what condition are they in? Kai's Photo Soap 2 can help you store, clean up, and manipulate your photos, and get them ready for posting on the Web. Soap 2 lets you easily erase scratches, crop out unwanted elements, and adjust image sharpness and color, then add and manipulate text and images using a system of Photoshop-like layers, templates, and clip art. You can put your finished product in an electronic photo album or print images in a variety of useful sizes, including business cards and wallet-size photos.

Soap 2's instant HTML conversion lets you easily prepare images for the Web, while the PhotoMailer feature cre-



ates a file with an interactive slide show that you can mail to other Mac users, but not across platforms. These features are similar to those of its competitors, such as Adobe's PhotoDeluxe, but Soap's interface is cleaner and more elegant,

and it provides you with SoapTalk, a chat feature for Soap users.

Soap 2 comes with a thorough online manual that's easy to access from any point in the program, but it's not keyword searchable. It isn't a complex program, and

MetaCreations provides a handy Quick Reference Card. But without a hard copy of the manual to page through or a well-indexed online manual, looking up a more complicated task, such as "cloning" (copying the pixels of one image onto another image), can be unnecessarily frustrating.

Some of Soap 2's icons and dialog boxes are pale and difficult to read, and they could benefit from some pop-up

help notes. Soap 2 also discourages multitasking by hiding the Apple menu bar. And on a PowerMac 7600, sometimes the program froze for no clear reason.

**The Final Decision** Soap 2 is a useful and fun product. Creative types may find composing and sharing images to be quite addictive — especially as they stumble on more features during their work. And with a little time, attention, and a lot of computer memory, Soap 2's image manipulation and correction abilities can rescue many an overexposed, aesthetically challenged, or otherwise lackluster image.

— Laurie Bouck

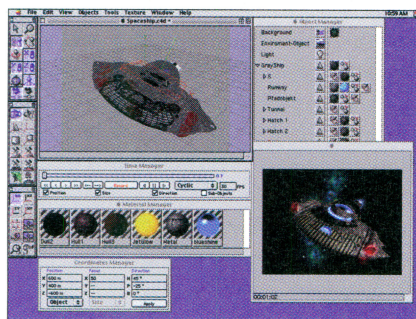
<b>rating</b>	★★★★
<b>\$50, MetaCreations</b> <b>800-846-0111</b> <b>www.metacreations.com</b> <b>PowerPC required</b>	
Simple interface, plentiful tools, easily converts photos to Web and slide show formats	
Minimal explanation of layout information, no hard copy/index of manual, stability problems	

## Cinema 4D GO

You're a company with a \$2,000 3D modeling and rendering application, and you want to get into the consumer market. You can either create an entirely new application and user interface, à la MetaCreation's Bryce, or adapt what you have. With Cinema 4D Go, Maxon took the latter course.

Cinema 4D GO looks, feels, and tastes almost identical to Cinema 4D XL, the company's professional modeling and animation application, and indeed, GO is actually XL stripped of its more advances features. As a result, the upgrade path to the \$1,795 XL, or the \$795 SE version, is an easy one.

Cinema 4D GO's heritage has its



advantages and disadvantages. On the plus side, there's nothing dumbed-down about this application. You're working with the same tools as the big boys, including objects, splines, lathes and extruders, volumetric light sources,

keyframe or timeline animators, and real-time textures, including displacement maps. Cinema 4D GO's rendering features are impressive, too. The ray tracing engine is fairly speedy, and will intelligently apply a faster but

less-accurate rendering scheme in areas hidden from view.

The down side is that even to get started in Cinema 4D GO, you have to be serious about working in 3D. For example, you can't just decide to doodle a cat and render it — you have to think in 3D, and figure out of what primitive

3D objects is a cat composed. A good but limited printed tutorial is included, but the world of Cinema 4D GO is a 3D one, and it does take time to learn to live in it.

### The Final Decision

For someone who wants a relatively inexpensive way to get into the world of 3D, Cinema 4D GO's low cost (relative to its high-end pedigree and feature set) is enticing. For those who just want to make interesting 3D pictures without committing to a lengthy learning curve, this might not be the best bet.

— Max Frischman

<b>rating</b>	★★★★
<b>\$199, Maxon Computer</b> <b>877-226-4628</b> <b>www.maxon.net</b> <b>PowerPC required</b>	
It's a real 3D modeling program, easy upgrade path, good ray tracing engine	
Complex interface, high learning curve, occasional poor translations in manual	



## GoLive 4.0

The biggest change in GoLive 4.0 is its ownership: Formerly known as Cyberstudio and published by the company GoLive, it's now called GoLive and it's owned by Adobe, which has added a few new features and enhanced others, and plans to make the program cross-platform.

GoLive 4.0 is becoming extremely complex, but GoLive has always been extremely scalable — if you're a beginner, you'll appreciate its layout grid, which lets you easily drag pictures, text, and other objects onto it and place them precisely where you want, instead of less-advanced tools that only offer left, center, and right. If you're looking for cutting-edge capabilities, such as cascad-

ing style sheets, DHTML, and JavaScript, GoLive lets you incorporate them graphically, without any coding.

An improved QuickTime movie editor includes a timeline like the one in Adobe's Premiere video editor. It's sup-

posed to be more intuitive than the one in CyberStudio 3.1, but instead of choosing effects only from the Inspector (which is supposed to change depending on which tool you are using), there's a whole new set of tools, and you need to remember to click on either the

timeline, the palette, or the Inspector — the palettes are getting busy.

Table editing is a bit easier than with previous versions. You can now easily select multiple cells at a time and format them. However, if you drag text into a table, GoLive automatically converts it to a GIF image.



Version 4 offers a few other improvements. Clicking a check box toggles links between absolute and relative, and contextual menus are supported for changing links in the site view. A set of 12 new JavaScript actions are built in, and it can check links inside Acrobat pdf documents (but it can't modify them).

**The Final Decision** It seems Adobe's major goal with GoLive 4 is to make it Windows compatible. That's too bad — CyberStudio was such an excellent product, it made the Mac a dominant Web-authoring platform. It's still a great product, but it's taking on Photoshop-like complexity and obesity.

— Alan Stafford

**rating**

\$299, Adobe Systems  
800-685-3612  
www.adobe.com  
PowerPC required

Increasingly capable

Increasingly complex

## Official Copyright

Official Software's Official Copyright is handy — most everything you'll need for copyright, correspondence, and basic research for protecting your creative works is included in a single package.

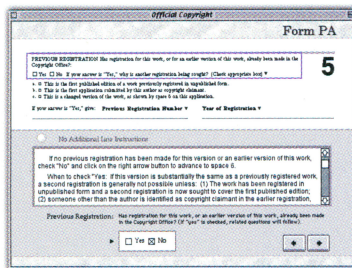
It gives you the forms to register most types of works, be they literary, musical, dramatic, or visual.

The most-commonly used forms (PA for Performing Arts, TX for written, VA for visual arts, and SR for sound recording) are presented in an interactive format: At each line where you need to enter data in these forms, there's a window showing instructions for that line, if applicable. But this interface is a little clunky; you see a representation of the actual form on the top of the screen, but

you enter data in a separate line near the bottom. Less-common forms are also included as PDF (portable document format) files, so you can print these as you need them.

To make filling out the forms quicker, Official Copyright lets you store your name, address, and phone number so it's automatically entered on the forms where needed. That, along with some nifty letter-writing functions, speeds things up a bit,

but other aspects of the program might slow you down. The program doesn't follow standard Mac conventions in such areas as file management or navigation. For example, you don't open existing documents as you would normally; instead you open the program, push the Accounts button from the main page, and select your document. And they have to be in a specific location for this



to work, so if you use the program on two different computers, you'll have to be aware of that when transferring files. Also, you can't open more than one file at a time.

Also, the program prints only in two-sided mode, so you have to watch for your printout, take it out of the printer, flip it over and re-insert it. This saves paper, but it could spell trouble if you're using a shared printer at work.

**The Final Decision** Official Software is a nice little package for creative types, but it would be better if it were constructed in a more flexible way.

— John Poultnrey

**rating**

\$79, Official Software  
888-325-5445  
www.officialsoftware.com

Complete set of tools and forms in one package

Inflexible set of features, slightly clunky interface



# Worldcrafting 101

## A Look at Bryce 4

**P**lunging into 3D has never been an easy proposition. You typically need months of study, tons of patience, and a very fast machine in order to produce something that could grace the cover of a CD. And then there's Bryce.

Bryce makes it very easy indeed to plunge into 3D. It's known for creating landscapes and terrains, but you can use it to create just about anything you can imagine, as these samples will illustrate. And version 4 is packed with so many new improvements that it's sure to please many a seasoned Brycer as well as inspire many new users.

### Getting Your Feet Wet

When you start Bryce, you find yourself in a three-dimensional grid surrounded by tools whose icons are themselves three-dimensional, casting shadows along their "shelves." Click on an icon to place an object into your scene — a donut, a cube, a pyramid, or a whole variegated terrain of mountains and valleys. A wireframe image of the object appears in the window, and in the upper left corner a fully rendered preview appears. Even at this stage (remember, we're talking just one click here), you've got something that looks pretty good, such as a wooden donut casting a realistic shadow over a sandy plain underneath a moody sky. But this is, of course, just the beginning. From here you can zoom in, out, and all around the donut to view it from any angle. Throw in some mountains, change the light in the sky — it's endless.

Any object in Bryce can take on myriad, realistic properties — glass objects are translucent and show reflections; metal objects glare when the light strikes them; earthy, crumbly textures have a slight dampness to them; and

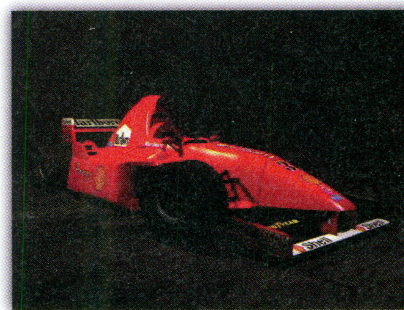
snow has a soft glow. And all of these properties are retained, so when you make any change to a scene, it's instantly reflected.

Bryce is easy to pick up because there are dozens of object presets and hundreds of materials presets you can use. But once you get involved with the program, you can tweak the many parameters to your heart's content to create your own objects and materials.

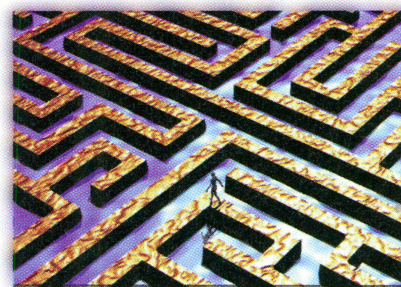
Bryce works well even on a slow machine. All the important things — moving through the wireframe and rendering previews — happen quickly. Using Bryce on a PowerMac 6100/66 was as easy as using it on a 400MHz G3. The only difference was in the final rendering, which takes about six minutes on a 6100 but a little less than a minute on the G3.

### What's New?

Seasoned Brcers will want to upgrade to the new version. Not only does it have a whole new module just for editing skies and a new animation preview window that shows smaller but fully rendered animations, it also has a much wider variety of import and export options. You can now bring in USGS maps, with which you can put your own spin on the Grand Canyon and other landmarks, and you can export Bryce files into Ray Dream Studio, LightWave, and AutoCAD — professional-level programs that cost well over a thousand dollars. And now Bryce adds a second CD full of examples,



Daryl Walter



Jen De La Cruz



Martin Murphy

ready-to-use trees and other objects, and useful tutorials created by actual Brcers.

**The Final Decision** If you want an endlessly fun and creative tool for your artistic energies, pick up Bryce 4. It's easy just to jump into, it's packed with a tremendous array of features for incredibly sophisticated refinement, and it will allow you to export your creations into 3D environments used by professionals. **AAA**

**rating** ★★★★★

#### Bryce 4

\$250, MetaCreations

800-472-9025

[www.metacreations.com](http://www.metacreations.com)

PowerPC Required

👍 Easy to plunge into, vast array of materials and tools, excellent tutorials, works well on slower machines

👎 Some functions hide the Finder



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# The Once and Future Internet

## Internet2 Speeds Up Education, Government Nets

**F**ive years ago, comparatively few people foresaw the changes the Internet would bring to society and commerce. Now that it's intertwined with nearly all aspects of our culture, some more forward-thinking types are shaping the next version — though it's not for everyone just yet.

You might not think “another” Internet is needed, but there are many who do. It's partially in response to the sheer popularity — and overcrowding — of the existing Internet, but more because of a desire among users involved in high-powered research and communications endeavors to enact new technologies that require greater bandwidth (which correlates directly to connection speeds). And pundits say the speed of Internet2, the moniker for a super-fast network now being tested, will be up to 1,000 times faster than today's Internet.

Intriguing, to be sure. Whether it will be that quick is not completely certain, but one thing's for sure — construction is underway to bolster the overburdened Internet for dramatically higher speeds and capacities. And though the current developments are largely private — the “next” Net will be open only to universities and their development partners — the technological improvements realized in these efforts will undoubtedly trickle down to the great unwashed before long.

That, of course, is what happened with today's Internet — after many years of developing “private” networks that were to be used for government, military, and academic purposes, the tech-

nology finally reached the masses in the early 1990s. We've all seen the results.

### Pick a Net, Any Net

Internet2 (I2) is a collaborative effort of more than 140 universities, along with a passel of corporate and government partners, to develop a new infrastructure that will enable new types of connected applications. Just as the “old” Internet brought us such far-reaching and influential apps as the World Wide Web and e-mail, I2's development community envisions such exciting new possibilities as telemedicine, virtual scientific laboratories, and libraries, for which the performance of today's Internet is insufficient.

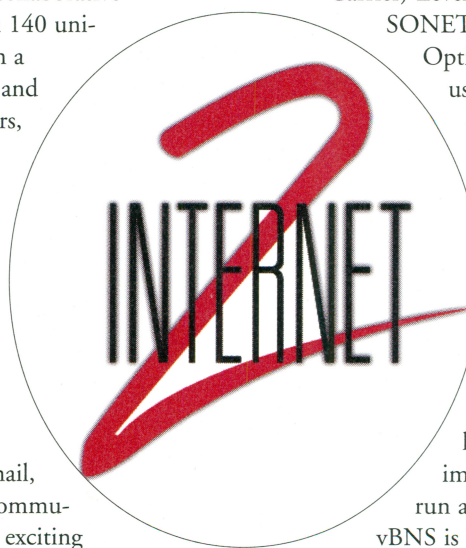
I2 will not be a completely separate network, but like today's Internet, it will be a collective of many networks, based on a higher-speed backbone network that is much faster than we're used to at

present. The current Net is a hodge-podge of various connection types, including slow, modem-based dial-up connections used by many Web servers. This heady melange of connection types explains why some servers work quickly while others are molasses-like.

I2 is based in part on the vBNS (very high-speed Backbone Network Service), a network that connects supercomputers and is used chiefly by universities for collaborative research. Until quite recently, vBNS used OC (Optical

Carrier) Level 3 networks from SONET (the Synchronous Optical Network, also used within such communities) infrastructure rated at approximately 155 Mbps. A T1 line, used for many “fast” Net connections today, runs at about 1.5 Mbps — so that's roughly a hundredfold improvement (T3s run at 45Mbps). Now, vBNS is bumping its infrastructure up to the OC-48 standard, with an average connection speed of 9.6 Gbps! So a thousandfold boost is not so far-fetched after all. Such figures conjure images of pages appearing instantly, and huge files transferred in seconds. But how much faster will I2 really seem to tomorrow's user?

“How much faster is a 100-lane high-





way than a 10-lane highway?" said Steve Goldstein, program director of Advanced Networking Infrastructure and Research at the National Science Foundation in Arlington, Virginia. "It all depends on how much traffic is on it and how the traffic is handled." In other words, some users may experience slow data delivery at times because the Net can't guarantee efficiency when it comes to routing data (often referred to as "packets" in the industry, as the data travels in packs that are routed to specific destinations and then reassembled into complete files). "The Internet asserts little discipline on traffic, though this is changing," Goldstein continued. "We're moving toward 100, 1000, 10,000, or however-many-lane highways now, but with imposed traffic discipline — not unlike a variety of carpool lanes — so no matter what, some high-priority traffic will be able to get through at the speed it requires."

Goldstein cited a number of ways such priority routing is guaranteed in I2's infrastructure, including the aforementioned optical network, priority queuing in routers and special "labeling" of data so that it gets routed correctly. "Some packets would get priority traffic on reserved lanes," he said, "somewhat like toll booth passes for frequent commuters."

Goldstein said the advances wrought by purely optical connections will effectively create networks with "100 different highways on one superhighway, and permit each one to be used for a different purpose."

### Work in Progress

Universities and corporate interests, as well as various advisory committees working on the project, are working together to test I2 before its underlying technologies reach the larger community. Think of I2 not as a replacement for the current Net, but rather a project that supplants

the Net's limitations while providing a proving ground for new technologies that are not feasible for the current state of things.

"The Net's inventors never dreamed it would be used the way it's being used now," said Dave Jefferson, Director of Technology at Highway 1, a nonprofit technical consortium advising the government on communications technology. "I2 is needed for a very basic reason: the Net in its current state is really the outgrowth of a research experiment, and having folks use it for e-commerce, video, and whatever else is something it was never meant for. The rapid expansion of these uses is leading to problems with security and bandwidth, and increasingly, no one can guarantee delivery of packets."

Much of the solution, Jefferson says, lies in what's referred to cryptically as "quality of service" packet delivery. "One of the problems with the current Internet is that with, say, RealVideo, you can't guarantee that all the packets will get there correctly and will assemble at the correct rate. Hence you'll get bad playback and other errors." The Internet, he explained, is built on "best-effort delivery," which means the Network makes its best attempt it can to make sure the packets get to destination — but it doesn't guarantee it. That's like standard postal mail. "With I2 and quality of service," he said, "there's a guarantee that the packets will get there correctly — you can say specifically how the packets will stream. It's like using Federal Express instead of the Post Office."

### Whole Lotta Uses

I2, which is already deployed at many universities, is manifesting itself in many ways, most having to do with collaborative research. Other uses envisioned by I2's planners include distributed learning modules, in which teachers and students share materials under the auspices of an educational system

## Internet: The Next Generation

Though he's not widely regarded as a technological spokesman, President Clinton called for a faster Net in his 1998 State of the Union address:

"We should enable all the world's people to explore the far reaches of cyberspace. Think of this — the first time I made a State of the Union speech to you, only a handful of physicists used the World Wide Web. Literally, just a handful of people. Now, in schools, in libraries, homes, and businesses, millions and millions of Americans surf the Net every day. We must give parents the tools they need to help protect their children from inappropriate material on the Internet. But we also must make sure that we protect the exploding global commercial potential of the Internet. We can do the kinds of things that we need to do and still protect our kids.

"For one thing, I ask Congress to step up support for building the next generation Internet. It's getting kind of clogged, you know. And the next generation Internet will operate at speeds up to a thousand times faster than today."

The "next generation Internet" to which Clinton refers is a government-sponsored initiative of the same name (NGI, for short), not specifically Internet2. While both projects are working toward a faster Net for the good of mankind, and they both share some resources and technologies, I2 is led by universities, while NGI is aligned more closely with the federal government's needs. NGI is focused on research and applications that are important to government agencies, including healthcare, standards and measures, and defense projects. Though there will undoubtedly be some sharing of technologies and infrastructure, NGI will concentrate on expanding and augmenting existing government networks, as well as building new ones. Though it's not certain to what extent I2 and NGI will share resources, all parties agree that cooperation is crucial to ensure maximum usefulness.

Participants in this initiative include the National Science Foundation, NASA, the Defense Advanced Research Projects Agency (DARPA) and the National Institutes of Health. *Next Generation Internet: [www.ngi.gov](http://www.ngi.gov)*



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# MacHome

or teacher; much of the modules' content can be customized into "LearningWare," based on existing object-oriented programming techniques (a graphical, rather than text-based, method of programming that involves linking objects representing code). Also under study is the Instructional Management System (IMS), a process for developing and delivering learning materials and tracking outcomes.

I2 is also being tapped for exploring new ways to visualize and retrieve information ("visualize" in this context refers to various ways of representing data visually, as one would do with a chart or graph). Though we've seen a huge proliferation of visual information on the graphics-oriented Web, I2's high bandwidth is likely to take it to a much higher level. The I2's Website suggests comparing standard textbook models, say of animal taxonomies, with technical illustrations and exploded views that impart much of the same information in a faster

way. Text is suited to slow connections; graphics are suited to faster ones; I2 will allow much better use of such graphics.

We've seen quite a few innovations in teleconferencing and videoconferencing of late, although many times the latter involves tiny, jerky video. High bandwidth will likely change all that; I2 architects envision "virtual environment sharing," also called tele-immersion, wherein conference participants would feel that everyone was in the same physical place, possibly using virtual models of shared work objects like architectural models or whiteboards. Along the same lines are virtual laboratories; these allow scientists to collaborate efficiently on such complex topics as astronomy, aeronautics engineering, and atmospheric modeling.

Highway 1's Jefferson also predicts large-scale advances in telemedicine, such as remote diagnosis and medical


imaging. "There's going to be a huge variety of apps," he said. "A big one will be virtual reality (VR) — I saw a demo recently where kids from locations around the country use avatars to explore a virtual physical world in which they could swim underwater, defy gravity, and so forth." Jefferson estimates it'll probably be three to five years before such technologies reach the general public, however. "It's not just a question of bandwidth magically making all this possible," he said, "There's quality of service and many other factors."

What's all this going to cost? Well, probably more than anyone expects at the outset, what with the large expenses typically associated with installing high-bandwidth networks. Internet2 says its

member universities have thus far committed \$70 million per year overall for I2 development at their campuses, while corporate members have ponied up around \$30 million per year. Some participants qualify for grants from the

National Science Foundation and other members of the federal government's Next Generation Internet initiative (see sidebar, "Internet: The Next Generation").

As for educational institutions that are not official I2 partners, the initiative says it will allow access to any university that commits to on-campus facilities for development purposes. However, the group notes that it expects the rapid pace of development and deployment will make I2 technologies and infrastructure available to a wide variety of educational institutions, not just those that can afford the initial investment. In time, the consortium envisions I2 reaching other schools (especially at the K-12 level) as well as the public library system. Kids, behave! Pencils down.

For further reading, check out the Internet2 consortium's home page at [www.internet2.edu](http://www.internet2.edu). 



## Food for Thought, Thought for Food

### Charity via the Web

**A** veteran of several Labor Day skate-a-thons and innumerable Jerry Lewis Backyard Carnivals, Bookmarks' normal preoccupation with opulence, luxury, and comfort now and again gives way to more magnanimous thoughts. To wit, we have been informed *yet again* of the obscene imbalance of this world's distribution of wealth, health, and food.

A blurry, faded fax handed to us by a coworker states that if the world's population were shrunk to 100, yet retained the current proportions and relationships vis-a-vis the aforementioned distributions, 80 would live in substandard housing, 70 would be illiterate, and 50 would be malnourished. And nearly 60% of the world's money would be held by *six* of us.

Bookmarks now feels a tad guilty as we slather more mayonnaise on our hearts of palm salad, and while wishing to eschew overly maudlin topics, we feel it is time to point out some sites that can connect the haves with the have-nots.

Therefore we submit for your consideration several sites that can serve as a conduit for our surplus monies to help those who, usually through no fault of their own, are struggling merely to survive. And though it's arguably more fulfilling to show up at the site of distress with a hammer, a Black & Decker WorkMate and a tub of German potato salad, take it from us, such an approach is impractical at best. Sometimes it's best just to send some money.

At the CARE Website, for instance, you can pledge your support for the Kosovo Emergency Response fund. The site maintains a secure server through which you can send a donation with your credit card, and therefore assist with CARE's mission to distribute supplies and medical help to the desperate situation in this now well-known region. There are also standard postal addresses on the site.

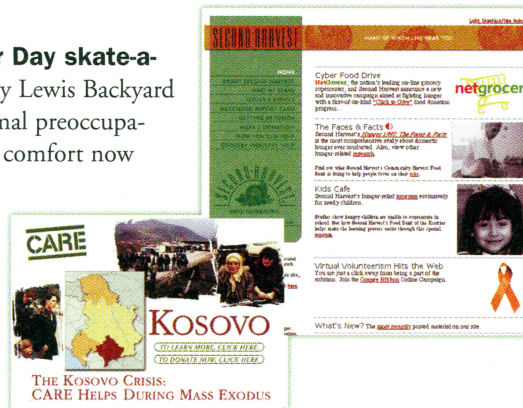
Likewise, the United Nations Children's Fund (UNICEF) maintains an online presence that also has a Kosovo fund. Unicef points out that a \$4 donation will buy a wool-blend blanket, \$32 buys 10 boxes of high-energy biscuits, and \$60 pays for 1,000 sachets of oral rehydration salts.

Food-bank specialist Second Harvest focuses on distributing food here in the US, where as the group points out, hunger is real and pervasive. The group's site offers interesting reading about hunger relief programs and has several options for readers to contribute to the cause. Bookmarks says, "Hey, why not?"

CARE, [www.care.org](http://www.care.org)

UNICEF, [www.unicef.org](http://www.unicef.org)

Second Harvest, [www.secondharvest.org](http://www.secondharvest.org)

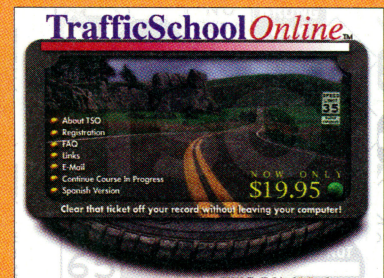


## Where's the Fire, Buddy?

**S**olving the world's problems is all well and good, but we have troubles of our own — such as car insurance. The temptation to speed past roadblocks and sobriety checkpoints *just because we can* results in the occasional threat to our vehicular encumbrance. And because we were so lazy about obeying the traffic laws, why not continue this languor by serving our penance online, via the Online Traffic School.

This program is geared toward drivers in California, but may soon expand to other states; generally speaking, you'll need your court's approval for online courses if you got a ticket outside of California.

This is just like going to traffic school, but you can complete the assignments on your own, and you don't have to watch "Red Asphalt." If you don't pass the class the first time you can take it



again at no additional cost. The 8- or 12-hour classes are \$34 and \$45. Similar services await you at Ticket Erasers and Traffic School Online, at \$20 per class.

Of course all this trouble could be avoided with a quick check of the Speedtrap Registry Website. Online Traffic School, [www.onlinetraffic.com](http://www.onlinetraffic.com)  
Ticket Erasers, [www.ticketerasers.com](http://www.ticketerasers.com)  
Traffic School Online, <http://trafficschoolonline.com>  
Speedtrap Registry, [www.speedtrap.com](http://www.speedtrap.com)



## Extra! Extra! Read All About It!

From the vital to the bizarre, Newsgroups cover it all

It's one of those "only in the Internet Age" stories. James Ricda is an aspiring screenwriter who didn't quite know how to get started in the business. Until he took a look-see at a screenwriting newsgroup composed of other like-minded writers living in the same area.

"When I started, I had plenty of script ideas but no real clue as to how to get started with the actual screenwriting process," said Ricda.

He addressed the problem online by posting messages on two Internet newsgroups dedicated to screenwriting and script-development issues. "I immediately struck gold by finding a group in my area — San Francisco — that met every couple of weeks to trade ideas and discuss problems related to scriptwriting."

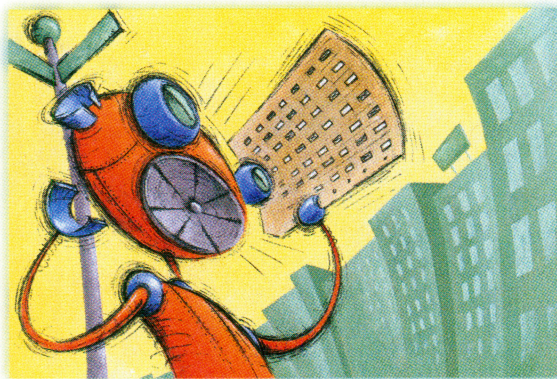
Better still, Ricda began participating in regular meetings that were facilitated through the newsgroup. "I found myself going from an isolated, unsure working style to a supportive, collaborative environment," said Ricda.

It's all paying off. Today, Ricda and the other members of the screenwriting newsgroup have all had scripts accepted and optioned by Hollywood filmmakers. And though he hasn't had anything produced yet, Ricda makes regular pilgrimages to Southern California to discuss his scripts with producers. Ricda now uses newsgroups to evaluate how other writers are using scriptwriting software.

### Window on the World

If you haven't explored the wide world of newsgroups, then you're missing out on a dynamic, informative, and sometimes bizarre Internet experience.

Usenet Newsgroups, as they are offi-



cially called, are free discussion groups about specific subjects — virtual corkboards covering a vast array of subjects. Newsgroups can be dedicated to topics as mundane as yesterday's weather, as obscure as 13th Century Italian fashion, or as inane as "geek supremacy."

Once someone posts a message on a newsgroup — a letter, an essay, a question — that message gets distributed all over the world. It'll be sent to thousands

of different "news servers" — basically archives of posts — and kept there for days, weeks, or months, depending on how the news server is set up.

There are some tens of thousands of newsgroups, and the number is growing. The largest newsgroups are international and have hundreds of regular participants, also known as posters. For every one poster, there may be scores of regular readers.

Some newsgroups are "moderated:" that is, the postings are first sent to a moderator for approval before appearing in the newsgroup. But most newsgroups are free-for-alls with no one interceding to block out rude, inflammatory, or irrelevant postings. And, of course, there's no guarantee that posted information will be accurate. When it comes to newsgroups, it's buyer beware, big time.

But the biggest drawback of newsgroups is the sheer amount of data available. The problem is slightly eased first by a system that organizes groups into subcategories, known as hierarchies.

There are seven main groups:

- **comp. (computer topics)**
- **misc. (miscellaneous)**
- **news. (newsgroup-related)**
- **rec. (recreation)**
- **sci. (science)**
- **soc. (society)**
- **talk. (discussion)**
- **alt. (alternative)**

Groups are arranged so they get more specific as you work your way down. For example, "rec.collecting.sports.foot-



ball," would be of interest to collectors of football memorabilia.

Data is further filtered with "threads," basically a series of exchanges on a single discussion topic. One thread on the above newsgroup might be on football memorabilia from the 1940s, another on predictions for next year's hot items. Most newsreader software programs allow you to sort by thread, making it easy to follow a discussion.

### Getting on, getting in

You will need two things to get started: an Internet connection and a newsgroup reader — a piece of software that can be downloaded for free or which may already be embedded in your Web browser.

The easiest way to tap into the world of newsgroups is through one of the many Web-based newsgroup directories (see info box). These sites let you search by subject or browse long lists of newsgroups to see what's out there. Once you find a newsgroup of interest, just click on the name and enter that world. Now you can read messages and replies, reply yourself if you'd like, or post a new message on an entirely new subject. It's your choice and it's always free.

You can subscribe to one or more newsgroups and automatically receive new postings, or you can simply check in on a newsgroup from time to time to see what's new.

Once you get the hang of it, you'll find that newsgroups can be fascinating, informative, and also a waste of time — sometimes a mix of all three with every visit. But you will most certainly find communities of people who share your interests, however popular or obscure.

Chances are good that you can already access newsgroups without having to download any special software. Netscape Navigator and Microsoft Internet Explorer both have newsgroup readers.

Every newsreader handles newsgroups differently. In Navigator and Explorer, for instance, a separate newsreader browser pops up and starts filling (sometimes slowly) with a list of messages to

be read. Just click on the title of any message to start reading.

If you don't have a newsreader-enabled browser, upgrade to Navigator ([www.netscape.com/computing/download](http://www.netscape.com/computing/download)) or Explorer ([www.microsoft.com/mac/ie](http://www.microsoft.com/mac/ie)) or you can download a shareware or for-purchase newsreader.

One of the most popular freeware Macintosh newsreaders is called NewsWatcher. One variant, known as MT-NewsWatcher, takes advantage of the multithreading capabilities in System 7.5 and higher. This lets you, for example, read articles in a group while extracting binaries files from another

since the last time you connected to the server, and then disconnect. You can then read the messages at your own leisurely pace, composing replies and new posts to be uploaded next time you connect to your Internet Service Provider (ISP).

Another newsgroup utility definitely worth a look is Hogwasher, a \$49 package from Asar Corp. of Rochester, New York ([www.asar.com](http://www.asar.com)), for \$49. Hogwasher is an online and off line newsreader that, among other features, includes a built-in JPEG image viewer and security settings so your kids don't land in the wrong newsgroup. A time-limited (30-day) demo is ready to download from Asar's Website.

You can find information and download these and other Macintosh newsreaders and suggested methods for working with newsgroups at — where else? — [www.newsreaders.com](http://www.newsreaders.com). VIII

## And Then There's DejaNews

One step up from your rudimentary newsgroup directory is DejaNews. This Website ([www.dejanews.com](http://www.dejanews.com)) bills itself as the only Website where you can read, search, participate in, and subscribe to more than 80,000 discussion forums, including Usenet newsgroups. You have to register, but it's free, and you get instant access to forums from any Web browser (with or without a newsreader) via DejaNews' Web-based, spam-filtered e-mail service. You can also create your own online community for free, and users add links from your Website to relevant discussion forums on DejaNews. It's definitely worth checking out.

and downloading from a third at the same time.

A filtering feature enables you to kill or highlight sets of articles that match or don't match certain criteria. MT-NewsWatcher can even respond to spoken commands on a Power Macintosh running Apple's Speech Recognition software. You can download this free application at [www.best.com/~smfr/mtnw/mtnewswatcher.html](http://www.best.com/~smfr/mtnw/mtnewswatcher.html).

Online newsreaders assume you maintain an Internet connection during the time the program is running. Off-line newsreaders, on the other hand, connect to the server, download all new messages for the newsgroups to which you are subscribed, upload any posts you wrote

## Checking out Directories

Looking for that special newsgroup? Fire up your Web browser and check out these Web-based directories that make it easy to search or browse for newsgroups.

**Usenet Info Center** (<http://metalab.unc.edu/usenet-i/>). A great source for Usenet Information. Contains pointers to many useful Usenet FAQ's.

**CyberFiber** ([www.cyberfiber](http://www.cyberfiber)). Newsgroups are categorized in this unique and copyrighted resource.

**Liszt of Newsgroups** ([www.liszt.com](http://www.liszt.com)). A flexible, searchable newsgroup locator, using a frequently updated list of newsgroups.

**DejaNews Research Service** ([www.dejanews.com](http://www.dejanews.com)). The largest collection of indexed archived Usenet news, and a hierarchical listing of newsgroups (see sidebar).



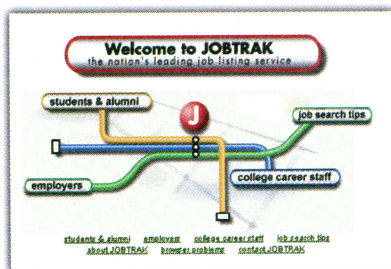
## Get a Job

**J**ust wait 'til you get to the real world and have to work for a living!" It's a time-honored parental line, usually precipitated by requests from kids trying to mooch money or car keys, or requests from the parents for the kid to get the heck out of their house. Of course, *their* parents told them the same thing when they were young.

Thankfully, according to the most recent statistics gathered by JobTrak.com, an online job-listing service for college students, MBAs, and alumni, the job market is better than ever. JobTrak's index shows an 85% increase in total job openings in March 1999 over March 1998. The top fields this year include agriculture and natural resources (up 269% over last year), education (up 315%), and psychology (up 215%).

On the downside, commercial and food services were down 23%, so "exploring your options" while working at the burger joint down the street may not work out as the best way to impress the folks.

[www.jobtrak.com](http://www.jobtrak.com)



## Publish or Graduate

**O**n **Highwired.net**, high-school students can publish their own school newspaper. Software isn't required, because stories are entered in online forms. Pictures can be uploaded to accentuate the stories, and fund-raising ads can be included, too.

[www.highwired.net](http://www.highwired.net)

## Smells Like a Safari

**R**ichard Pryor once said that when he went on safari, he was riding in a Jeep with some native Africans who were somewhat less concerned than he was about frequency of bathing, and the smell was a bit overpowering. Then he noticed that the natives looked like they were holding their noses. It turned out to be that they couldn't stand the overpowering smell of his cologne.

It's all about perspective.

You won't find any scratch and sniff cards in Virtual Serengeti, a new \$30 CD-ROM from Grolier Interactive, but you will find 150 full-motion videos, plus photos and animated maps. Kids can explore panoramic environments and use sound clues — the growl of a lion or the screech of an eagle — to locate animals hidden in their natural surroundings. Virtual Serengeti also includes an interactive journal

and virtual video recorder, which allow kids to create their own video documentaries on African wildlife; and a field study journal loaded with facts on the behaviors, habitats, and physical characteristics of wild Serengeti animals.

Grolier Interactive, 203-797-3530, <http://gi.grolier.com>



## National NetDay Coming

**N**ational NetDay will be held October 23, 1999, at a school near you. NetDay is an annual event in which volunteers use donated materials to wire schools so they can connect to the

**NetDay**

Internet. While more and more schools are gaining Internet access, that connectivity is still limited, particularly in rural and poor school districts.

NetDay is organized via, appropriately, an Internet Website. If you're interested in volunteering, you can search for a target school in your area on the NetDay site, or use the organization's fax-on-demand number (888-786-3897). Or, you can call your local school to volunteer.

[www.netday.org](http://www.netday.org)

## Feed Your Brain

**I**BM has licensed the educational software Brain Quest from Workman Publishing. Big Blue says it will use the software to develop a series of entertainment and educational software titles for use in school and on home computers. Brain Quest products are question-and-answer card decks covering subjects such as language arts, math, geography, science, history, and social studies.

The agreement calls for not only the software, but also a series of supplemental, downloadable questions via the Internet. IBM plans to build software that features more than 1,000 new questions per grade level and enables children to play alone, head-to-head on one computer, cooperatively, or against someone else over the Internet.

[www.software.ibm.com/hke](http://www.software.ibm.com/hke)



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machome.com

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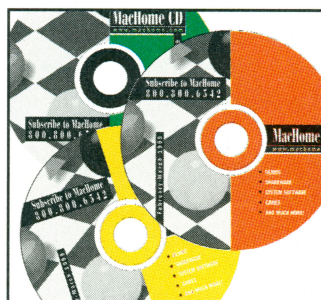
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## Read and Spell with Zoo-phonics



\$35, VTechSoft  
800-742-1050  
www.vtechsoft.com  
ages 3 to 6  
PowerPC required

*Zoo-phonics* is one animal park that parents will have no problem prying their kids away from. Using the backdrop of a zoo, this program attempts to lead kids through 15 related activities on their way to learning phonics.

The field trip starts off shaky and goes downhill from there. The hostess Zoophonica is an odd grandmother type decked out in safari regalia and is reminiscent of the eccentric, uncool, grade-school teacher that

every student lived in fear of being assigned to. Right away, kids will find themselves weirded out rather than inspired.

There are two options for getting through the CD: a guided tour and self-exploration. Independent kids, however, will suffer if they choose to skip around the CD — the first lesson happens to be critical in helping them learn which zoo animal represents what letter, a theme that is carried throughout the CD.

Now, one would think that this would be an

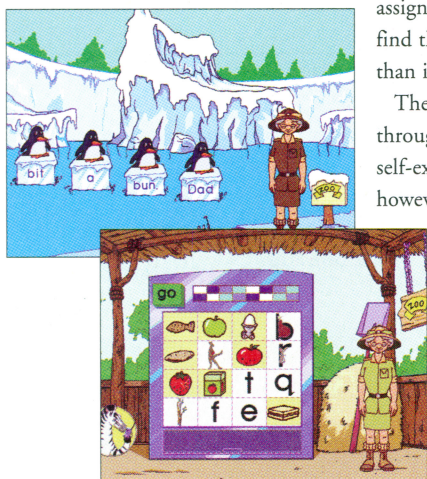
intuitive activity — obviously a zebra represents a “z,” a cat a “c,” an owl an “o” — but that’s where one would be mistaken. In *Zoo-phonics*, it just so happens that an owl represents an “n” (for night owl, we presume?), a bat represents a “v” (vampire bat?), and Umber the umbrella bird a “u.” Interesting, but we thought the point of the product was to help kids learn.

As a result, this crazy animal theme makes most of the 14 other lessons confusing. For instance, in one activity, kids must sort a variety of suitcases with various letters and pictures into train cabooses with the corresponding letter. Unfortunately, the CD interpreted my inability to associate a bat with a “v” as a phonics problem on my part, not a lack of common sense on theirs.

In another activity, Zoophonica asks kids to click on the correct letter (or animal representative) when she sounds a letter phonetically. But it’s often difficult to decipher what she is saying. Did we mention that some of the audio doesn’t work?

There are a few meager redeeming activities in *Zoo-phonics*, but all in all, kids could probably learn more from a well-skilled monkey than they could from this CD.

— Cathy Lu



## Cook'n for Kids



\$30, DVO Enterprises  
888-462-6656  
www.dvo.com  
girls ages 8 to 14; boys ages 8 to 45

It was with great awe that I watched boys and girls one-quarter my age following grown-up recipes in *Cook'n for Kids*. These plucky pre-adolescents demonstrate how to julienne, sift, fold, grease, beat, mince, chop, dice, grate, and brown foods, all without breaking a sweat (or cutting off a finger).

In the Learning section, kids click on photos of 48 different utensils — from pie tins to spatulas — to find out how and when to use these tools. What looks like a torture-chamber device is in fact an innocent pastry cutter, “useful for quickly cutting solid fat into flour to make biscuits or pastry dough.” Cooking terms are also well defined here.

Though the basic definition for the term “pierce” is “poking a piece of food with a sharp object,” the software’s description advances into science: “Have you ever heard a potato explode in your oven? It can cause a real mess. ... The holes left by the fork tines allow steam to escape from the potato so it won’t build up and cause an explosion.” Also provided are numerous safety tips (“use hot mitts,” and “if you catch on fire, stop, drop, and roll,” were two of my favorites); nutritional guide-

lines; and hokey dining

pointers, telling kids what to do when confronted by two different forks or “yucky food.”

The Recipes section provides more than 100 printable recipes, from

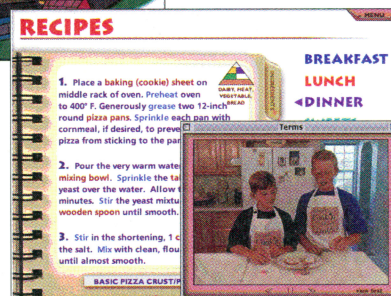


pigs in a blanket to teriyaki chicken. Each includes a color photo of the finished product, a complete list and photos of the ingredients, and a list of utensils

required for preparation. To view video clips of the child-chefs who put me to shame, simply click on the highlighted cooking terms in the step-by-step instructions. Alternating camera angles allows a dual perspective: you can see into their mixing bowls one minute, and into their smiling faces the next. It’s real feel-good stuff.

The matching and secret recipe games in the Activities section are less of a draw but are worthwhile as they allow kids to link cooking with fun. My only criticism of *Cook'n for Kids* is the moronic portrayal of our video hostess’s father. Forget the kitchen — a man like this would not likely survive in the world. Using his idiocy to make the rest of us feel better demeans an otherwise-cooperative experience.

— Amy Shafron





# JumpStart Numbers



\$10, Knowledge Adventure

800-542-4240

www.knowledgeadventure.com

ages 5 to 8

PowerPC required

For the price of a pizza, kids can be well on their way to learning the basics about numbers and math. With three simple and engaging learning games, kids can practice counting, sequences, addition, subtraction, multiplication, and all integral principles of the subject in a quick, colorful, and uncomplicated way.

The premise of the CD is nothing less than cute:

Frankie the dog has scarfed his

entire supply of biscuits, and it's a kid's responsibility to solve enough math problems to restock his safe.

While Frankie retreats into a

food-induced slumber, kids choose one of three dream worlds: a desert island, the Wild West, or outer space.

Each locale teaches a different mathematical skill. On the desert island, kids have to comb the beaches in search of the correct numbers or items that fill out a given mathematical sequence. And what would a jaunt to a desert island be without a treasure hunt? By filling out six sequences correctly, kids help Frankie uncover buried treasure.

Meanwhile, in the Wild West, users must sling bones at the correct cards that correspond to the given number. At the highest level, for instance, kids are given a number and must pick out the multiplication equations that yield that answer — but they've got to think fast, because equations can disappear from view pretty quickly.

In outer space, kids must balance equations by picking the right asteroid or clump of asteroids before they get destroyed. Other than the theme, this activity is nothing like the amazing old *Asteroids* game, as much as the packaging would have you believe (calling it an "exciting arcade-style game"). Fun learning activity is more like it.

*JumpStart Numbers* is especially useful if purchased for preschool-level children or for families with more than one child trying to learn math. Before even getting into the games, kids indicate their grade level (anywhere from preschool to third grade) and from there they can alter their difficulty level at any time.

The games provide no adrenaline rush, and they can get somewhat tiresome after awhile, but they do endorse the practice of learning by drill. In fact, it's much like the flash cards and multiplication tables of yesteryear — only much more colorful and 10 times more fun.

— Cathy Lu



# Masterworks from the Collection: The Metropolitan Museum of Art



\$40, The Metropolitan Museum of Art

800-468-7386

www.metmuseum.org

If you long to experience the collection at the Metropolitan Museum of Art, New York, I suggest you arrange a trip to Manhattan's Upper East Side. Try as it might, The Met's new CD-ROM, *Masterworks from the Collection*, doesn't offer a fulfilling tour of the museum. However, it does function as a good reference and study tool.

Phillipe de Montebello, the Director of the Metropolitan, presents a dozen or so masterpieces. These include "Head of a Dignitary" (Iran, 2000 B.C.) and "Standing Parvati" (Tamil

Nadu, 10th C.). The objects, though exquisite, appear as flat photographs, just as they would in a book. A walk through the museum's Rockefeller Wing, past the masterpieces themselves, or perhaps straight into the

Temple of Dendur would have been a better introduction. (The temple, we later learn, was given to the U.S. by Egypt in lieu of a thank-you note).

Still, the software offers meaningful access to cultures from the ancient world to present. The Collections section includes chapters on Ancient Egypt, Ancient Greece & Rome, Medieval Europe, the Islamic World, China & Japan, Africa, Pre-Columbian America, the United States, and more. More than 250 works of art are presented as full-screen color images, with comprehensive commentaries by the Museum's curators.

Within Ancient Egypt, you'll find 16 works from that time period, (click on Timeline for comparison charts) including the fragment of a sunken relief entitled, "Two Princesses." The description of the relief reveals that it was part of the decorations in a temple at Tell el-Amarna. We can click on "Tell el-Amarna," or on any other highlighted words, to find out more. The program's cross-referencing allows for quick mastery of subject matter: While studying Gilbert Stuart's paintings of George Washington, I was directed to Robert Fulton's sculptures of our nation's first President. I also learned about the direct link between the simple, geometric designs of the Ancient Greeks and European Neoclassicism.

The difficulties I had cutting and pasting in the Notebooks section and finding "lost" works of art in the index did not prevent me from accumulating information. I learned fun details about wardrobe (in Medieval Europe, ladies of rank wore hair-nets called "snoods"), authenticity (Robert Campin did not produce the left panel of "The Annunciation"), Roman emperors (Augustus commissioned the poet Virgil to write *The Aeneid*), and timing (while visiting Paris, Thomas Jefferson witnessed the beginning of the French Revolution). I will certainly return for some more art history. And soon.

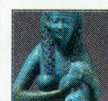
— Amy Shafroin

THE GARDEN OF LOVE (IMPROVISATION NUMBER 27)



1912  
Wassily Kandinsky

STATUETTE OF ISIS AND HORUS



The soft fullness of these two figures, especially the round belly of the child, immediately dates this faience statuette to the Ptolemaic Period. Isis wears a typical tripartite wig and the traditional vulture crown worn by queens and goddesses. The bird's head, which once rose protectively above Isis's forehead, is broken. Isis's hieroglyphic attribute, the throne, is perched on her head, its shape mirrored by the throne on which she sits. Seated on her lap, Horus is shown naked and wearing a sidelock of hair, the Egyptian conventions for indicating childhood. This sculptural image of the nursing mother and child dates back to the Old Kingdom in Egypt and may be a source of similar imagery in Christian art.



## Mindscape's Jan Lindner on All Things Gaming

### A MacHome Game Developer Close-Up

I'm sitting in Jan Lindner's dining room in San Francisco. His place is spare and neat; the nerve center of the flat is a small room in the back, where several Macintoshes sit at attention. Lindner is vice president of research and development at Mindscape, a large game-producing company.

He oversees the making of such large-scale titles as *Imperialism II* and the upcoming *Prince of Persia*, shepherding them through the development process. We spoke about what's coming up at Mindscape, the Mac marketplace, and the future of gaming.

**MacHome: So, you've just finished *Imperialism II*. What's coming up in the next few months?**

**JL:** Probably the most important one is *Prince of Persia*, a big game for us with a long tradition. We're trying to translate the whole thing into the 3D realm, a situation in which you're trying to stay close to the original, but you're also trying to do something that's well done in 3D. It's coming along nicely now; we're getting close to beta. *Creatures 3* [is slated for] later this year. Imminent at the moment is *Fighting Steel*, which is a real-time 3D World War II game; it's a large-ship gun-combat game.

**MH: What's the difference between *Creatures 2* [which should be out for the Mac by press time] and *Creatures 3*?**

**JL:** We're making a much larger world in which you can do a lot more than you can do in *Creatures 2* — which was about making the creatures more intelligent, making them interact with you on a more intelligent level — and also making the world an ecosystem.

**MH: We talked a little bit at Macworld Expo about how strategy games are like the computer gaming industry. How do you think Apple's done in 98-99?**

**JL:** They're doing much better than they used to; they've started to make gaming platforms that are appealing to play on a Mac. I think the biggest "if" in terms of success is still the question of whether they manage to draw the developers to the point where there's a substantial number of games on the Mac. People are

starting to develop for the Mac again — we just did *Imperialism*, which will be released simultaneously on both platforms. You can see that some of the big games are coming over, but the big question is whether a substantial chunk of games will make it to the Mac.

On the hardware side, they've actually done well to a point where it makes sense to implement for the Mac.

It's a completely viable platform; there's no immediate problem as a developer that would keep you from doing it. The problem is business model: How many people out there will buy your game; how big of a Mac gaming community is there? These are the big questions that need to solve themselves in this cycle. We're looking to see how *Imperialism* does on the Mac to get more insight.

**MH: Do you think the trust is coming back? I hear many developers felt kind of burned by Apple.**

**JL:** Burned? ... I don't know. Burned is maybe the right word for some people, but for me personally, about two years back in terms of business, [the Mac] was





just not a viable platform anymore. There were plenty of things that people, including me, did on the Macintosh because it was the best platform for that, but there was really no point in doing games for it. The tendency of going into 3D, which is very true for a lot of games over the last year or two, completely wasn't available on the Macintosh. It was not easy to do anything that ran in 3D; you had to implement RAVE, which was a whole proprietary thing — 3D-card support was barely there. That's changed, so that makes it viable on the technical side for a lot of games to be either ported or developed on the Mac.

I think the OpenGL decision is a good one. If you look at graphical hardware with the ATI Rage 128 card, you can go beyond that, but that's actually a solid platform in every [G3] Mac.

**MH: So what do you think that Apple needs to do to succeed in the 21st century?**

**JL:** There's a busload of historical things that simply *exist* under Windows, and it would be very hard to reverse that. The majority of the exercise has to lie with providing a machine that, for the cost point, is a very good gaming platform.

**MH: You voiced reservations about the iMac as a gaming machine.**

**JL:** The Apple market is dominated by the idea that you have a standard platform that you don't need to open up and update this and that. That seems to be the core philosophy of the iMac.

The original criticism of the machine that I voiced was that, while it is a fine machine, it doesn't really go quite far enough as a gaming platform. There have been various exercises in alleviating that — people have offered, for the A and B revision iMacs, cards that you could stick in, which particularly with the B revision, for 3D effects, was actually something that was fairly viable. The C revisions don't have the [mezzanine] slot any more.

I'm just thinking it would be nice if that machine was designed a little more upwards: Let's say the thing had the ATI

Rage 128; let's say it had a processor that was a little faster. That would make it more viable — you would get something that simply would not elicit that criticism from me any more. And of course it would help if they changed the mouse, that hockey puck.

**MH: Do you consider yourself a Mac fan?**

**JL:** I'm not particularly a fan of anything that's a piece of hardware. [I ask], what do I do in my life and work — what's the best platform for this? It turns out that in many cases, though my job revolves around PC games, all of the things I do at home, even in terms of office work, are more easily done on the Mac. But if somebody came along tomorrow and presented me with something that was an entirely different machine and did all off the same things with the same ease and faster, I'd switch.

**MH: What about Linux?**

**JL:** Linux is fine; I'm running two Linux machines here, and there's nothing wrong with Unix. I started learning programming on Unix 15 years ago. It's not grown up to the point where it would be a consumer machine, and no matter what you do in your working life or in your home life, you're still on the consumer end of things when you get down to working. You don't want to be very involved with the OS, and mainly it's a question of applications running fast enough and the way you need them. Linux is not quite there yet for me.

**MH: How do you think OpenGL will affect the way games are ported?**

**JL:** It depends on which interface you implement for initially, from wherever you're porting the thing. If you were porting from an OpenGL-based application to an OpenGL application on the Mac, that makes things easier, because now you have the bona fide, certified

Macintosh OpenGL solution in the system. Fact is, though, if you look at the Windows game side, you have a lot of games that are written primarily to DirectX 3D or Glide. While it certainly makes the conversion easier to have the proper 3D API in the system, you're still talking conversion at that point.

Strategically, though, the decision is very sound because, personally, my favorite of the APIs at the moment is Open GL, so it makes sense.

**MH: Why is it your favorite?**

**JL:** It's just the most expandable of all the APIs. Again, looking at a market that is evolving very rapidly, that's one of the main arguments for the API. While the Glide stuff is very good, it's bound to a specific hardware made by a specific manufacturer. DirectX has a similar problem in the sense that it's for a specific operating system and a native API.



**MH: It's accepted industry wide, and it's logical in terms of evolution, that gamers are more sophisticated now than they were ten years ago and they have more sophisticated demands.**

**JL:** Let's say you were playing a bunch of games, and it's become a fun habit. If you were doing it under DOS, you were dealing with your system *a lot*, to put it mildly, and that's never really gone away on any platform. We just found the one bug in *Imperialism* that is system related — if you have a rare installation of System 8.5.1 — there's one installation that normally doesn't



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get installed. The multi-lingual support for Web browsers conflicts with the game.

That puts you into the loop of disabling your system to play the game, since games tend to be fairly high-tech in their nature, because they're trying to push the envelope in terms of what's doable on the machine; they push the user envelope of how much they need to get involved with their system. So that's something that's developed to a point where, yes, your average gamers are much more savvy than their hardware.

**MH: What kinds of things do you think are going to push the envelope in the next couple of years in terms of what developers are doing in game categories?**

**JL:** If you look at John Carmack and id Software doing *Quake 3 Arena*, you're looking at two things: It's the whole question of how much can you push the hardware in terms of 3D frame delivery, even if you go technically more complicated with things like surfaces.

It makes a very clear stand that a lot is going to happen on networks, which is one of the envelopes we've only just barely begin to push. The first games persist in online worlds, and we have literally hundreds of people in there, though at the moment they're actually still fairly slow.

This is going to go push the network stuff much more than it does in its current state. If you think of simulations where you have hundreds of people flying planes across the Internet — where the whole question of how much data do you need to push, how much data detection is going on, what can you see from each and every one of those planes — it's really going to push the technology of what's happening on the networking end.

[Network play is] probably the biggest area in the sense of, that's the youngest child in all this. There are other areas — graphically, it's always amazing to me how simple delivery of the graphics hardware keeps doubling each six months at least. I wouldn't say that there's no end in sight, but there are a few more iterations of that [to come].

On the game-design side, you're beginning to see large-game design-team efforts that produce things that are on a scale that's just beginning to be built. An example from our own development is *Prince of Persia*, which is a huge art project. I don't think there are too many things out there that do 3D free-form environments on that scale.

Productions get bigger and bigger. A year and a half ago, *Riven* was an amazing effort with five CDs, and now you've got DVDs on which you can deliver larger things than that at a higher quality. I've just seen a very nice game, actually — *The Ring*, which is based on the Wagner opera that a French company did; it comes on six CDs. It has multiple languages, and it's stunning, but you could immediately improve it if you did the DVD version, because you'd run all the graphics at a higher quality. It sounds as though things are just getting bigger and bigger, but the fact is that quality keeps jumping as well. **MH**



# DESCENT<sup>TM</sup> 3



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## Descent III and Baldur's Gate:

### Coming to the Mac

**G**raphic Simulations is taking a lesson out of MacSoft's book and porting two Interplay titles, *Descent III* and *Baldur's Gate*, to the Macintosh. But unlike most game ports, *Descent III* will be available for the Mac almost simultaneously with its PC version. •

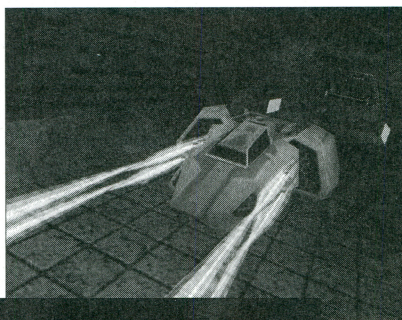
Jeff Morgan, president of Graphic Simulations, said the Mac version of *Descent III*, a first-person shooter that is due out in early June, had a chance to beat Interplay's PC version out the door, but at the last minute Interplay was able to move its ship date up. The reason for the almost-parity of ship dates is that *Descent III* was written using OpenGL, an API (applications programming interface) that Apple recently licensed from Silicon Graphics. OpenGL is fast becoming the industry standard for game creators, who use it to create 3D graphics. Apple's incorporation of it into the Mac OS allows Graphic Simulations to port such games quickly and easily. "OpenGL is the easiest, cleanest way to get really cool effects," said Morgan. "They hand over the code and we take it from there."

OpenGL is supposed to be incorporated in the next version of the Mac OS (8.6) and Mac OS X, and a beta of it is available now. "It's good that Apple is using OpenGL," Morgan said, "because without it, *Descent III* would not be on the Mac." However, *Baldur's Gate*, which is a Dungeons and Dragons-like role-playing game, is not OpenGL-based. That game is scheduled to be released in mid September.

All OpenGL-based games will run on most iMacs (but not Revision A models, which have the Rage II chip set). The minimum requirements are a Rage Pro graphics chip set, which arrived with Revision B, along with 6MB of video RAM. The game will excel with the blue-and-white G3's Rage 128 video card, and aftermarket 3Dfx video cards will work well, too.

Interplay shut down its MacPlay division a couple years ago in the midst of Apple's great depression. However, the success of the iMac and now the blue-and-white G3 is piquing the interest of game developers. Morgan said sales of Graphic Simulations' flight simulations games, such as *F/A-18 Korea*, have picked up markedly since the iMac's introduction.

Morgan said Interplay definitely wanted to port some of its games. He also said MacSoft's success in porting other company's games played a part in his decision to work with Interplay. "It sort of amazed me that MacSoft was the only company that did this," he said. He revealed that Graphic Simulations has contracted with Interplay to port one other, undisclosed game, and that the two companies meet regularly to discuss other porting possibilities. "The atmosphere [for Mac games] is substantially better than it once was," Morgan added.



## Preaching to the Micro Converted

**Y**ou know what we're talkin' about: Announced in the April issue, the MicroConvert Me contest awarded a 12MB Voodoo 2 graphics accelerator card from MicroConversions to the most silver-tongued MacHome reader (the winner was picked at random from people who entered). The contest asked you to tell us what Apple should do in the coming year to ensure its success.

Some of the more interesting entries: Richard Sevilla's "one-minute sketchy," which was included with his entreaty, "instead of thinking different, think style!" and Jenna Nickel's illustration of G3s in five colors). Verrrr' nice.

But enough! Maestro, the envelope please! The winner is ... Linda Chaisson of West Poland, Maine! Ms. Chaisson's entry: "Oh Mr. Jobs/Can't you see/What Apple needs to compete successfully/Clones, open licensing for OS Mac/And please give floppy and SCSI back!" Linda promised in her letter to give the prize to her father for Father's Day, so Mr. Chaisson, expect a box in the mail very soon.

Thanks to all who entered!

## Tamte Bungie Jumps

**P**eter Tamte, formerly the founder and executive director of GT Interactive's MacSoft unit, has left his post as senior director of consumer marketing at Apple. Tamte is joining Chicago-based Bungie Software as Executive Vice President of Publishing.

Tamte helped MacSoft grow from the ground up to become the largest publisher of Macintosh consumer software worldwide. At Apple, he was responsible for the company's worldwide consumer marketing.

[www.bungie.com](http://www.bungie.com)



## Civilization II Gold



\$50, MacSoft

800-229-2714

[www.wizworks.com/macsoft](http://www.wizworks.com/macsoft)

PowerPC Required

Here's an old friend, all dressed up and ready for action. Or better yet, make that ready for online interaction.

*Civilization II*, one of MacSoft's top ten sellers since its introduction in 1997, is back in circulation as *Civilization II Multiplayer Gold Edition*, and it's loaded with accessories. The core game is basically the same (and that means infinitely playable), but now you get a fistful of extras, including a couple of flashy add-on packs with close to 40 fresh scenarios.

You also get a new multiplayer option. No more sitting in front of your computer, staring at the game screen for hours on end while you battle the computer's artificial intelligence. Now you can sit in front of your computer and stare at the screen with real live online people for company. And you will sit there, because the game is still mesmerizing.

Let's get the problems out of the way first. We're working with a three-year-old game engine here, so don't expect any surprises. The graphics are unchanged, too. No super 3D support or dazzling terrain or blazing explosions. Just the same flat maps and bustling figures doing your bidding. There are still a couple of bugs to be worked out, too. For some reason, the game (but not my Mac) crashed every time I hit the Quit button. No big deal: I just rebooted and came back when I was ready. My saved games were still there and waiting.

Negatives aside, *Civilization II* still rocks. You get to shape the entire history of mankind from early primitive civilizations to the space age. You start as a small band of settlers in a hazardous, unexplored territory and spend a couple of thousand years trying to build your society into a world power. There are four possible paths to success — exploration, economics, knowledge, or military conquest (though a combination of the four works best). The ultimate goal is to beat the rest of the world into submission or be the first to reach the stars.

The game is addictive, exciting, and you'll want to play it over and over. Tired of being a Roman? No problem. Change your tribe. You have a choice of 21 ethnic tribes, from Aztec to Zulu. Want new challenges? Alter your strategy. If you've won enough battles by being militaristic, try switching to diplomacy. Or concentrate on research and technological advances. Or go the economic route and spend your enemies into ruin. The game never seems repetitive; it's never dull.

If you want even more variety, try one of the two bulging add-on packs, *Fantastic Worlds* or *Conflicts in Civilization*. You'll get some startling situations. You can lead the Mongol hordes, populate a land of dinosaurs, try your strategy in the Napoleonic Wars, visit lost Atlantis, fight aliens on distant planets, settle a magic kingdom, or even play Santa. There are 39 bizarre new scenarios to amaze and amuse you.

With the Gold version's new multiplayer option, you just open a game online and wait for other players to join you. Or don't wait: Dive in and start playing. The game will manage all the competing civilizations until another player joins the game and takes over. It's an entirely different game when you go up against human opponents. A chat window allows discussion, diplomacy, and horse-trading. And you can change gaming options at any point during a game, as long as the other players vote unanimously to accept the changes.

Is *Civilization II Gold* worth the hefty price? If you already have a copy of the classic *Civilization II*, you may have to wrestle with your conscience a bit. But if you missed the original, there's only one answer. Rush out and buy a copy today. It's a great investment, because you'll still be playing the game months from now. Maybe years.

— John Lee





## 3D Ultra NASCAR Pinball



\$20, Sierra Attractions

800-757-7707

[www.sierra.com/attractions/titles/pinball4](http://www.sierra.com/attractions/titles/pinball4)

PowerPC Required

At first blush I didn't think there would be any way that the sounds and excitement of playing pinball on an arcade machine could be duplicated on a computer screen. I was wrong.

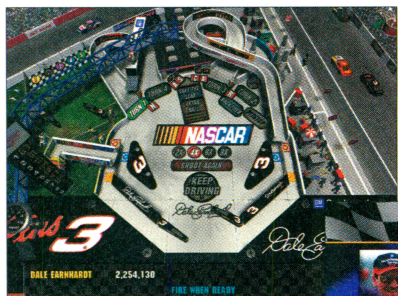
Warning! This game is as addictive as the arcade versions and requires the same kind of dexterity and concentration to score points.

The Bristol Motor Speedway, the Talladega Super Speedway, and the Watkins Glen International Raceway are the three racing venues featured. From the main menu you can visit the NASCAR Vault, where you'll find video clips on each track as well as clips on the history of NASCAR. There is even a clip telling you everything you need to know about pit stops.

Players race and score points by hitting targets, such as Pit, Take the Lead, and Turn 4, on the pinball screen as directed.

You sign in by selecting one of four drivers: Dale Earnhardt (a seven-time Winston Cup Champion), Bill Elliot (the circuit's most popular driver), or the Labonte brothers — Terry and

Bobby. Select Play or Practice and you're ready to roll. All gameplay begins in the garage. Once your car is ready to race — or you have let the ball



get by your paddles — you are ready to practice and then qualify for the race. For novices like me, it is nice to be able to select "easy" or "hard" play options.

*NASCAR Pinball* allows you to customize your flippers, plunger, and table nudge controls — yes, you can bump the table just like in the arcade. By default, Apple's Input Sprockets are used to read the keyboard and the game controls, but you can turn off that option. You can also use a variety of game pads and controllers.

If you get lost or don't know what to do, you can access a context-sensitive online manual to guide you. Just type in the first few letters of your question and then choose from a list of matching topics to get your answer.

The game can be played on any Macintosh with 8MB of free RAM. However, a 200MHz or faster PowerPC with 32MB of free RAM is the recommended setup.

— Art Jones

## Sci-Fi Pinball



\$30, Fox Interactive

888-369-0031

[www.foxinteractive.com](http://www.foxinteractive.com)

PowerPC Required

The pinball machines of our youth were beautiful machines. They had murals for backdrops, a shiny, heavy metallic ball, and a crack! when you slapped the ball off the glass tabletop. Every once in a while you'd have to wipe your hands on your pants because the sweat made the flippers slippery.

Fox Interactive's *Sci-Fi Pinball* does a credible job of reproducing the murals in its four-table software pinball game, but it overproduces the simple act of playing the games. It's too much to expect *Sci-Fi Pinball* to reproduce the visceral qualities of pinball games of decades past, but this package doesn't even offer much challenge.

The tables are based on four Twentieth Century Fox movies — *The Fly*,

*Aliens*, *Predator*, and *Buffy the Vampire Slayer*. Artwork carries the theme, and if you hit a particular target, clips from the associated movie show in a little window, and you can hear dialog from the actors in those



movies. However, the movies aren't high quality; you can barely see what's going on. The dialog is sort of interesting the first couple of times, but then you want to turn it off.

If you complete certain sequences in the games, you're challenged to play little video games in the movie window; the games are ugly monochrome and extremely simple, so they're distracting from the pinball action. And, because the video window takes up space onscreen, the actual pinball table is only half the size of your screen, which is too small.

The pinball action isn't extremely challenging either. Each game offers three skill levels, but none of them really tests you — targets aren't that hard to hit, sequences aren't difficult to complete, and the ball rarely "drains" on you.

With a minimal installation, you can play the game off the CD, or you can choose a full installation that takes up 447MB of hard drive space. Even with the latter, you'll get occasional jerkiness in the gameplay. We also had problems with crashing on a few machines.

While it's obvious considerable effort went into *Sci-Fi Pinball*, the package takes the pinball art form far beyond its roots. There are a couple of software pinball games out there, *Full-Tilt! 2 Pinball* from Maxis being the best example, that simulate the old free-standing tables much better, and they offer much longer-lasting fun.

— Alan Stafford



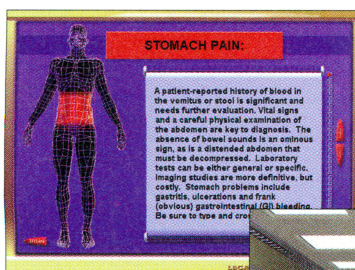
## Emergency Room 2



\$30, Legacy Interactive  
323-463-0300  
www.legacyinteractive.com  
Power PC Required

Games such as *Railroad Tycoon* or *Imperialism* allow you to blend strategy and resource management to build fiefdoms or empires, as the case may be. *Emergency Room 2* takes this type of simulation and grounds it in modern medical reality.

In it, you play the role of emergency room doctor. After viewing an animation of a helicopter touching down on Legacy Memorial Hospital, you elect to have patients chosen for you randomly or at your whim. *ER2* comes with 100 scenarios, and more can be downloaded from the *ER2* Website. The higher the patient number, the more difficult the case: Maladies range from "took too many pills" to a variety of Saturday night specials, and of course, the run-of-the-mill chest pains and bone fractures.



there, take your patient into the examination room and perform a variety of tests to confirm your diagnosis and determine a course of treatment.

If you're looking for a fast-paced equivalent to television's ER, this is not the game for you, but if you're looking to play doctor for a few hours, this is the only game in town. The learning curve is about a half an hour: Moving around isn't the most intuitive, but it's a joy to actually heal someone. Your progress is reviewed by Dr. Boss, a curmudgeonly older doctor. Patients are played by real-life actors in a blend of video and animation, and though their responses sometimes seem to be something out of a poorly dubbed Japanese movie, when you do something inappropriate the actions are pretty cool. When I accidentally palpated the thigh of a patient with an arm contusion, he stiffly let me know that his cousin was a malpractice lawyer.

If you dream of being a doctor, this title is downright edutaining, but if you're looking for a fast-paced sim, you're better off with the television variety.

— Anne Marie Feld



## Intensor Chair



\$249 (\$99 for chair base), BSG Labs  
800-274-5227  
www.intensor.com

The first time I saw BSG's Intensor Chair was at the E3 Expo in 1998. Granted, my first reaction was, "What the heck is that thing?" Once you've used it, however, there's no turning back. As video and computer games have struggled to bring the player into their worlds, we have found that we can only be fooled so much by flashy graphics and lots of blood. BSG's Intensor Chair takes the sounds of the game and amplifies them into you ... literally.

Lodged in the seat and back of the Intensor Chair are two thumping subwoofers that pound the vibrations of the game into your spine and rear end. Tweeters are located behind your head and on either side of your legs. All-purpose speakers point out into the room to provide even more sound. The result? Well, some may call it a free massage. Others may call it some sort of sex toy (you'd be surprised how many people have asked us if the chair comes with attachments). For gamers, we call it a big step in computer gaming. The Intensor Chair truly does add an entirely new element to gaming, especially with such games as *Quake*, *Unreal*, and *Future Cop*.

The Intensor isn't perfect, however. If you want to modify the Intensor into a desk chair (with the optional chair base), you're going to find it somewhat uncomfortable when used for prolonged periods of time. The chair tends toward an upright, 90-degree angle, and only becomes comfortable if you make the effort to lean back. This is definitely not the type of chair that you want to type in. If you use the Intensor as a piece of floor furniture (for which it was originally intended) you'll find it to be much more comfortable. The chair has a curved base, which allows it to naturally rock back and forth, and your back is better positioned to really feel the pounding.

I encourage BSG to keep tweaking the Intensor to the point where it truly does offer an entirely new experience. As it is now, the chair is definitely something to feel, but gamers wanting a full-time desk chair should certainly look elsewhere and save the Intensor just for gaming.

— Rafi Guroian





## Rules of Engagement

### Proper Etiquette for Communicating Online

It's an interesting testament to our times that we increasingly rely on text as our primary means of communication. Whether it's online news sites, e-mail, or chatting, we're all becoming writers by necessity.

Fittingly, the textual world of online communications carries its own set of rules. You can avoid many of the irritating blunders made by new owners in their first months online by adopting a few suggestions.

People speaking face to face communicate not only with words, but with inflection, gestures, and facial expressions. Communication over the telephone functions as an acceptable substitute — we can hear the smile in a voice. Remove both the aural and visual content, and you strip communication to its bare essentials. Therefore, be careful how you word your messages. You can be easily misunderstood.

One way to clarify your meaning is to use emoticons. “You can't be serious” might be seen as curt and condescending. “You can't be serious : )” suggests playfulness or simple self-deprecation.

Avoid sending e-mail to large groups of people using the “carbon copy” option. Carbon copy sends the e-mail message to everyone listed, and it includes each person's e-mail address in the message. Each recipient sees who else received the message, and, if they like, they can send e-mail to any person listed. This is significant for people who prefer to keep their e-mail addresses private. So, if you're sending mail to a group of people, use the “blind carbon copy” option to suppress

the recipient list so that no one reading the message sees anyone else's address.

Under no circumstances should you ever send a large file — say, larger than 500K — without express permission. There's nothing more irritating than finding a 10MB surprise in your mailbox. You must wait 20 minutes for it to download before you can open any other mail that arrived after it.

Most e-mail applications include a spell checker. Use it: It's one thing to make silly spelling mistakes when you are sending e-mail to a friend. It's a whole other issue when

you are communicating with your boss or a prospective employer. You certainly won't win any respect with statements such as, “I was very pleased to speak with you concerning your employment offer.”

Those who send and receive loads of e-mail value brevity. When sending messages to business contacts and acquaintances, be succinct. Don't bloat your message with ancillary, unneeded information. The person you are writing to may have to read hordes of e-mail messages daily,

and poring through a lengthy message to determine its purpose can be a chore. It's different, of course, if you're writing to a family member or pen pal.

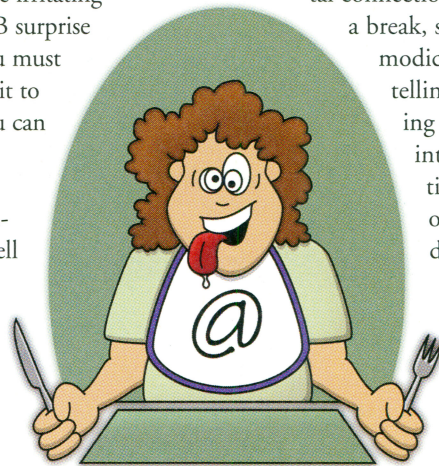
Don't forward silly joke messages to everyone in your address book. It's likely that some people will find them unwelcome nuisances — in essence, spam.

If you're speaking with someone using a chat program such as AOL Instant Messenger, keep in mind that there is a live person at the other end of the digital connection. If you have to take a break, show your friend a modicum of respect by telling them. There's nothing worse than getting into an good conversation with someone, only to have them suddenly go silent.

Though it may be a mundane thing, it's by far the most irritating: Whatever you do, do not type exclusively with capital

letters. It's generally accepted that words spelled out in capitals suggest strong emphasis, perhaps even screaming — i.e., “HOW DARE YOU SUGGEST THAT!” Sadly, when people come across entire messages typed in capitals, they easily (and accurately) infer that the person is new to the world of computing.

The old adage “do unto others as you would have them do unto you” is the best advice we can offer. Simply be smart and considerate as you communicate, and you'll have no worries. ■





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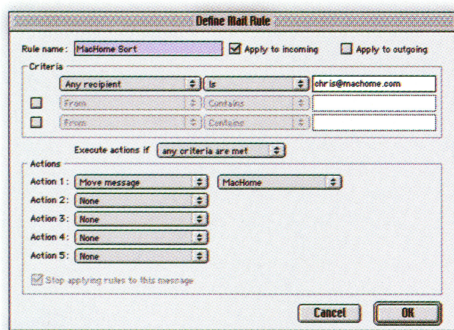
**THIS IS NOT A REGISTRATION FORM.**



## Outlook Express Mail Rules

**A**s do most e-mail client applications, Outlook Express 4.5 allows you to intelligently sort your incoming e-mail. If you have several e-mail addresses, you'll find the Mail Rules feature indispensable. Instead of having each account dump its messages into a single In Box, you can have e-mail from each account filed in its own folder.

The first step is creating a new e-mail folder. To do this, select Folder from the New submenu under the File menu (or hit Command-Shift-N on your keyboard). Name the folder in a manner that allows you to easily recognize the account — for example, my *MacHome* e-mail folder is aptly titled "MacHome."



The next step is to select Mail Rules from the Tools menu. In the window that appears, click New Rule in the top left corner — a window entitled Define Mail Rule appears. In the text box in the top left, give your rule a recognizable name. Now, in the Criteria box, you'll specify the rule. Select Any recipient from the first pop up menu, and select Is from the second. Then, in the text box to the right, type your e-mail address. This tells Outlook Express to scan all incoming e-mail for messages sent to that address.

You'll then need to define the action to be performed with mail that fits the criteria. In the Actions box below, select Move Message from the first pop-up menu. A second pop-up window then appears to the right. From the menu, select the folder you just created, and click OK. From now on, all incoming e-mail with that address will be filed in that folder. Repeat this procedure for your additional e-mail accounts.

If you receive the bulk of your e-mail from several key people, you may want to take a different approach to Mail Rules. Instead of filing incoming e-mail by account, you can file it by sender. Make several folders and name them after your most frequent contacts — for example, John Doe, Mary Smith, etc. Next, select Mail Rules from the Tool menu and create a new rule. Leave the first pop-up menu in the criteria box as From, and change the second pop-up menu to Is. In the text box to the right, enter your friend's e-mail address. Then, select Move Message from the first Actions pop-up menu, and the appropriate folder from the menu that appears to the right. All incoming e-mail from that person will be now filed in its own folder. Repeat this procedure as desired for any additional e-mail addresses you want to filter.

Experiment with the order in which your mail rules are applied. For example, if you create one rule to automatically capture the e-mail address of anyone who sends you a message, you'll want that rule applied *after* the rules that redirect messages from the various mailing lists. Otherwise, the latter rule will capture e-mail addresses such as "listserve@gruntparty.com" and "massmailings@apple.com."

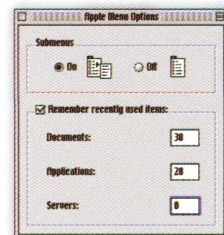
Mail Rules can also be used for a variety of other tasks, including message forwarding, printing, and auto-replying. More-advanced users can even configure certain e-mail messages to trigger AppleScript macros. Experiment with all the options, and you'll be amazed just how easy it is to get organized!

## More Recently Used Items

**T**he Apple menu's Recently Used

Items folders allow you to quickly access files and applications you've just been using. The folders are preset to collect the most recent ten items you've accessed.

However, you've probably found yourself looking in the folders only to find that the item you want is a little too old, and it's been bumped from the list. That leaves you to dig through your hard drive to find the item all over again. You can make your life easier by bumping up the number of recently used items that will appear in the folders. Open the Apple Menu Options control panel. In the box titled "Remember recently used items," set Documents to 30 and Applications to 20. (If you only have one computer, you can set Servers to 0.)



## Port Is in Use?

**O**ccasionally, your Mac will give

you a message that you can't print because the printer port is "in use." You check the ports on the back of the computer, and your modem is hooked to the modem port and your printer is hooked to your printer port. What gives?

Most likely AppleTalk is set to use your printer port. When you zap your PRAM, many of your control panels are reset; AppleTalk reverts to its default setting of using the printer port. To fix the problem, deactivate AppleTalk in the Chooser, or use the AppleTalk control panel to switch the designated port to the correct one.



# System Software Installation Made Safe

**I**nstalling an update to your system software can be a bit trying. What if there's an incompatibility between the new software and an application you use every day? It's a leap of faith, to be sure. You often cannot foresee the incompatibility until it happens. And if there's no way to work around it, you're stuck reinstalling the previous version of the system software — a process that can take hours.

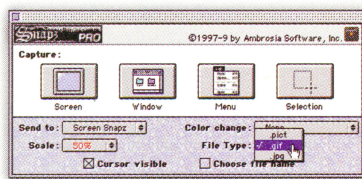
The best way to avoid this mess is to duplicate your System Folder before you apply any system software updates. Highlight the System Folder with a single click, and select Duplicate from the file menu. So long as you have enough hard-drive space, you'll have a perfect copy of your system software. The duplicate will be named "System Folder copy."

Install the system software update, and test it for a few hours. If you run into any problems, it's incredibly simple to return to the old system software. Unfortunately, you can't just toss out the active System Folder — the system software won't let you. There's a sneaky way to get around the restriction, however. Open the updated System Folder and drag the System suitcase into the trash. Then drag that System Folder to the trash. Locate "System Folder copy" and rename it "System Folder." Then you need to make sure that computer recognizes the old System Folder as the active system software. To do so, open the folder. All subfolders should have the correct system software icons — for example, the Apple Menu items folder icon should have a colored Apple logo on it. When you close the System Folder window, its icon should also show the Mac OS logo. Simply restart your Macintosh to return to your previous system software.

## A Shot to the Printer

**F**rom time to time you've probably wanted to take a snapshot of your screen and send it directly to the printer. This frequently happens in games, such as *Riven*, where information is presented on screen and there is no other way to copy or print it. You might also come across a Web page that doesn't print out properly — perhaps the text is white and doesn't print at all. You might even want a copy of a menu for quick reference. Ambrosia Software's Snapz Pro 1.1.1 comes to the rescue, allowing you to grab screen shots in irregular sizes from just about any application or game.

You can specify any key you want to take the screen shot. When the key is pressed, an option window appears allows you to select the entire screen, a window, a menu, or a user-defined area. To send an image directly to the printer, select Printer from the "Send to" menu. In the blink of an eye, the screen shot is taken and the image is fired off to the printer. It's very a convenient tool. Snapz Pro is shareware (\$20) and is available from [www.ambrosiasw.com](http://www.ambrosiasw.com).



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## Monitor Lines, Big, Bad CDs, and Grinding Out the RAMs

**Q** I just purchased a new Blue G3 with the matching Studio Display 17. On the display, there are two subtle horizontal lines going across the screen approximately three inches from the top and three inches from the bottom. They seem to be on the inside of the tube. There's no difference no matter what the resolution is. Is this normal or is my dealer trying to pull a "fast one" on me?

*Chris Gaffan*

**A** The two horizontal lines are quite normal. The lines are actually grid stabilization wires; they're present in high-end Trinitron and Diamondtron displays. Your monitor has a special grill



of vertical wires that help enhance the sharpness and clarity of the on-screen image. The horizontal wires, which are thinner than a human hair, help support the grid and stabilize it against shocks.

The grill of vertical wires in the Studio Display 17 is so fine, in fact, that the horizontal wires occasionally aren't enough to stabilize it. If the monitor has been exposed to cold temperatures or unusual vibration, two of the vertical wires may adhere to each other, creating a visible vertical line on the display. However, a moderate tap to the left or

right of the display will shake the vertical wires free of each other.

**Q** What causes a bad CD? From time to time I'll pop a CD into my Mac and it just cannot be read. I'll hear it spin and spin and spin until the computer eventually says, "The disk cannot be read. Do you want to initialize?" Usually, I just have to get another copy of the CD to fix the problem. I don't really understand how one CD might work while another will not, just because of a scratch or two.

*Andrew Ralton*

**A** The most frequent cause of CD failure is damage to the bottom of the disc. The plastic layer of a compact disc is very susceptible to scratching. Many people set CDs face up on flat surfaces, intending, of course, to put the discs in their proper cases just as soon as they find a free moment. In the meantime, a tiny grain of sand sitting between the desk and the disc can spell disaster. Should the disc be pushed just two inches to the left, it can cause the grain of sand to dig into the bottom surface of the CD and create a two-inch scratch. While a few subtle scratches won't ruin a CD, a single deep scratch can be devastating.

A CD-ROM drive uses a laser to read information from the metallic layer of the CD. If the laser is reflected back to the sensor, a "one" is registered; if the laser is not reflected, a "zero" is registered. A scratch on the plastic underbelly of the CD can cause the laser to deflect before it reaches the disc's metal-

lic layer. Since the laser is not reflected back to the sensor, the CD-ROM drive interprets a zero — a big problem if the actual value is one. A single error will certainly confuse the computer — and several such errors will cause the computer to declare the disk unreadable.

You can protect CDs by storing them in a safe location after use. If you must set the CD on a flat surface for a short time, consider placing it with the label facing down. In the event you've set the CD on some grains of dirt, you will scratch the painted label instead of the precious plastic underbelly.

**Q** As a recent convert to the Apple camp, I bought a PowerBook G3 233/32MB/14" with Mac OS 8.1 installed. I bought this laptop for its speed, but its performance has been anything but stellar.

Scrolling through a long document in Microsoft Word 98 is impossibly slow. I can hear the hard drive going in the background and the cursor only moves when the hard drive stops temporarily. Web pages take a similarly long time to scroll through. Occasionally, I hear the hard drive making a grinding noise that lasts for about ten to fifteen seconds. Only then will images appear. Can you give me an idea of what the problem might be? It is really frustrating that my Pentium 133 literally outperforms the PowerBook.

*Jordan L. Cheng*

**A** The original PowerBook G3 series have a documented problem with video drivers. After the computer has been sleeping for five or more minutes,



graphics acceleration is aborted. This causes many screen operations to function much more slowly — especially when it comes to scrolling through a window with much information. The slow performance continues until the PowerBook is restarted.

Your experience sounds remarkably similar. If you purchased an original PowerBook G3 (introduced May 6, 1998), it's likely this is the cause of your problem. To cure what ails you, simply download and install the ATI Driver Update 1.4.7 at <http://asu.info.apple.com/swupdates.nsf/artnum/n11172>.

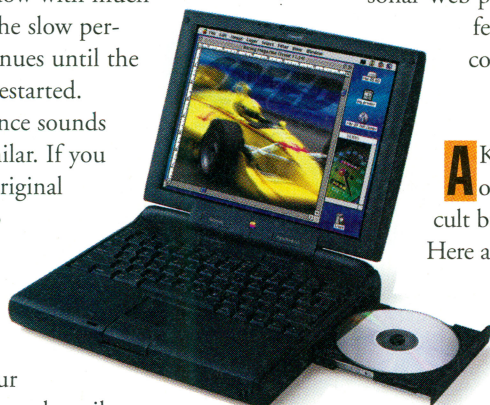
The second revision PowerBook G3 (introduced September 1, 1998) includes the recent ATI drivers and consequently does not suffer the same problem. If you have a second revision PowerBook G3, however, it is possible that the drivers have been misplaced — perhaps they were accidentally removed from your System Folder. If this is the case, you may be experiencing the same slowdown. Install the ATI Driver Update 1.4.7 to make sure the proper drivers are installed.

The final possibility is that you simply don't have enough RAM. Unfortunately, 32MB just isn't enough anymore. Mac OS 8.1 demands approximately 16MB of RAM to function properly, leaving you with just 16MB for additional applications. Microsoft Word requires 10MB of RAM, and Internet Explorer 4.5 will steal at least 4.5MB of RAM. Once you've opened two or more applications, your computer starts using virtual memory. The contents of RAM are frequently swapped to and from the hard drive, resulting in a continual grinding noise. The single best solution to this problem is to install an additional RAM module.

**Q**I recently changed my e-mail address because I was inundated with spam

messages. I received more than 150 of these in one month. How could I have gotten on their e-mail lists? I don't participate in any chat rooms or have a personal Web page. I have ordered a few things from reliable companies, however.

*Walter D. Thomas*



**A** Keeping your address off spam lists is a difficult but not impossible task. Here are a few things to keep in mind:

**Do not enter** your e-mail address on a Web page if you suspect the

address may be used improperly. Ask yourself why the site needs your address, and balance that with your knowledge of the site's reputation.

**When you fill out online** forms to buy merchandise, download product demos, or enter contests, be sure to select any option that keeps you off mail lists.

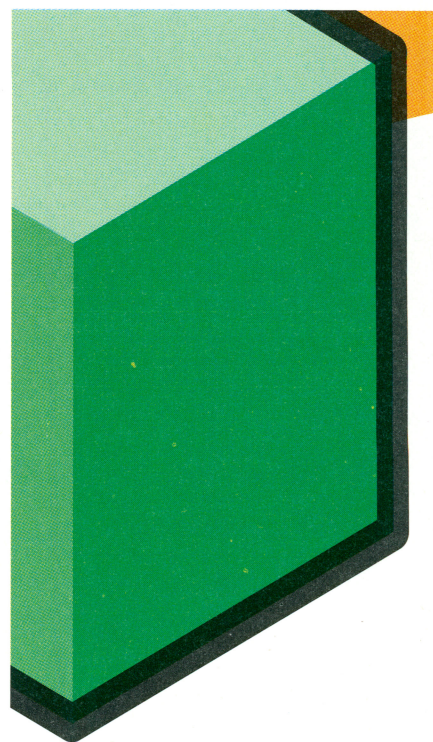
**Avoid posting to Internet** newsgroups. Spammers harvest e-mail addresses from newsgroup postings.

**Never respond to spam**, even if it is to ask to be removed from the mail list. The very action of replying tells the spammer that there's somebody home.

**Your friends may be suspect.** Have you ever received an online greeting card? In the process of sending you a thoughtful message, your friend gave out your e-mail address. Greeting card sites are a popular way of collecting valid e-mail addresses. **III**

## let us know!

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# Internet Encryption

## How Data Is Transferred Securely over the Web

**E**ncryption is the conversion of a message into an unrecognizable form, or cipher, for security purposes. It allows information, such as a credit card number, to be transmitted in secrecy, understood only by the receiver.

To comprehend the cipher, however, the receiver must have the correct decryption “key.” The key is the algorithm that is used both to encrypt and decrypt the message. For example: I can use the code A=01, B=02, C=03, etc., to write my first name numerically: Chris becomes “0308180919.” To the casual observer, it’s a meaningless number. To the intended recipient, it’s my name.

### Where’d I Put My Keys?

The most popular form of encryption used on the Internet today is RSA public key cryptography, a system that makes use of two distinct keys to secure the connection between two computers: a public key and a private key. A set of unique keys is generated for every computer. The public key encrypts a message so it can only be decrypted by the matching private key. The public key is distributed as required. The private key encrypts a message so it can be decrypted only by the matching public key. Unlike the public key, the private key is always kept secret.

Because public keys are widely distributed, it raises the possibility that a malicious third party could intercept the public key and try to impersonate another computer. Theoretically, a hacker could redirect an online sales form and convince your computer that it is still speaking to the retailer’s server. However, without the retailer’s private key, the hacker

could never decrypt the information.

Certificates were developed to help enhance identification. Issued by a reputable authority, a certificate binds a public key to a specific individual or institution. The certificate contains the owner’s name, public key, expiration date, serial number, and digital signature. This makes it much harder for a hacker to nab a public key and impersonate someone else.

Consider a typical experience at an online retailer. When you click on a “buy” button or link, a request is sent to the online retailer’s server for a secure connection so that you may transmit your credit card number without fear of the data being intercepted. In response, the server sends its certificate to your Web browser to verify it is the computer it claims to be. At the same time, the server sends you its public key and cipher preferences. Using the preferences as a guide, your Web browser uses its private key to generate a master key. That master key is encrypted using the retailer’s public key, and it is transmitted back to the server. The server uses its own private key to decrypt the message and finds the master key. To show

that it has received and understood the master key, the retailer’s server then returns a message to your computer that has been encrypted with the master key. This last step authenticates the secure connection between your Web browser and the retailer’s server. Subsequent data exchanged between the computers is encrypted and authenticated with keys derived from the master key. The likelihood that the cipher can be intercepted and decrypted is significantly lessened by periodically changing keys.

Modern Web browsers use two different encryption key formats: 40 bit, or standard encryption, and 128 bit, or “strong” encryption. As the name implies, 40-bit encryption uses a key that is 40 bits long, each bit with a value of “0” or “1,”

with more than a trillion possible permutations. It’s possible, though very unlikely, for 40-bit keys to be cracked by a computer that relentlessly tries every possible combination until it finds a match; 128-bit encryption, required by many banking Websites, is virtually uncrackable. The 128-digit key has a whopping  $3.4 \times 10^{38}$  possible permutations. William Crowell, Deputy Director of the US National Security Agency, asserts that an individual using “250 workstations ... would take an estimated nine trillion times the age of the universe to decrypt a single message” encrypted with a 128-bit key. ■





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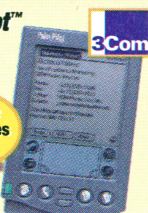


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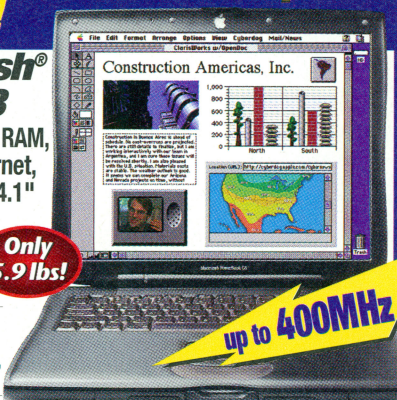
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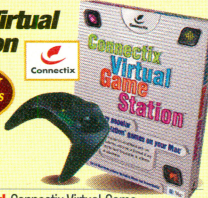


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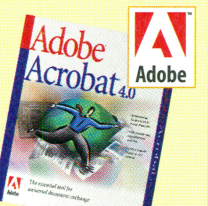
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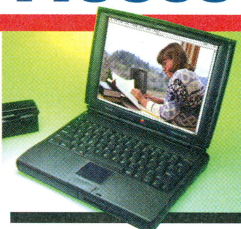


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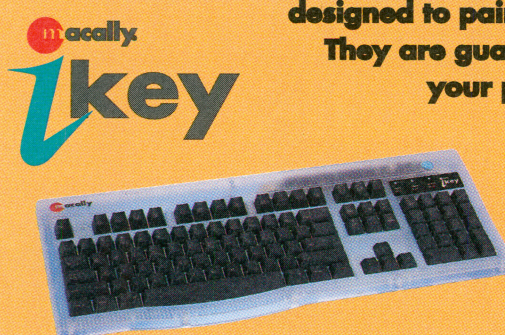
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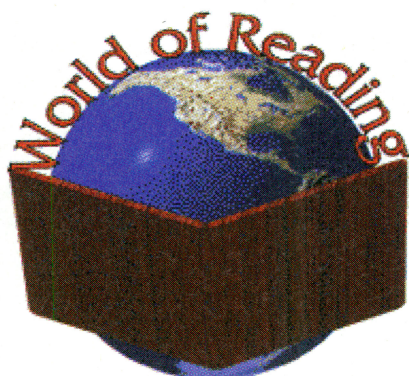
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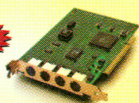
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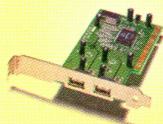
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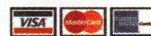
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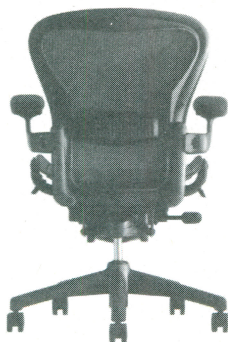
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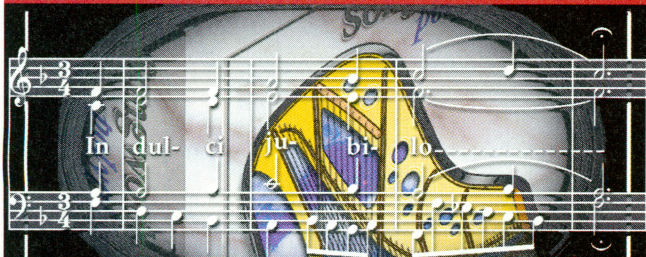


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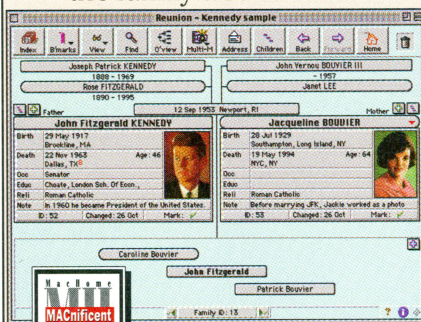
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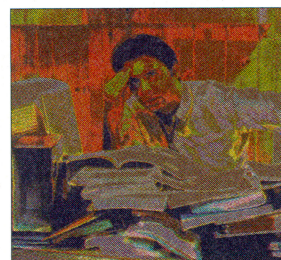
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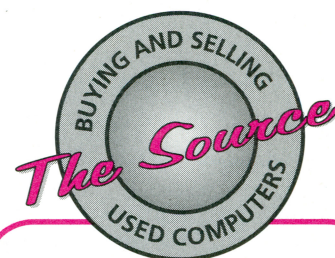
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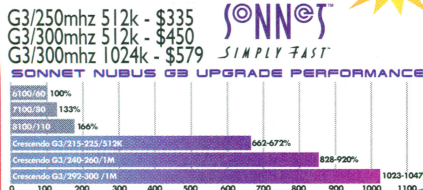
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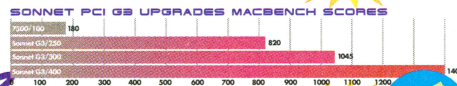
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# the Finder [Commentary]

By John Poultney

## I'm Looking through You Translucency Mania Sweeps America!

**S**eems the iMac has inspired many imitators, and not all of them are computer products. What gives? What's going on? How did this happen?

If the picture of that rakish 1950s Nash Metropolitan at the bottom of this page is any indication, the iMac's hipster two-tone color scheme is nothing new. But combining the colors with translucent plastics seems to have struck a chord with designers the world over. Witness the translucent blue boombox from Sony, not to mention the portable CD player, both pictured here. And there's the Bissell Spot Lifter vacuum cleaner, and the Rowenta Surflite steam iron — more proof there's obviously a certain cachet associated with translucency of late.

iMac designer Jonathan Ive mused in a *MacHome* interview last year that translucency appeals to him in part because the color changes as the light moves behind it. To him this reflects the many moods of the iMac — one moment it's helping you understand your finances, the next it's making music, then it's an architectural drafting system. Whether other designers see such lofty visions is uncertain.

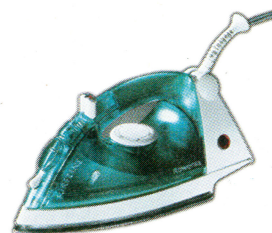
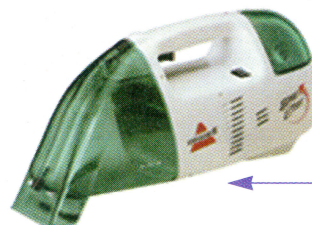
"Translucency is nice; everyone wants to see what's inside," said Hartmut Esslinger, founder and CEO of Frogdesign, the company that helped Apple design the original Mac and Mac II back in the 80s. "But it's not something to base a philosophy on."

Nor, says Esslinger, is translucency anything new: "In 1965, I designed a translucent radio back in Germany," he said. "And we also made translucent shower heads in 1973. They let you see that the water flow inside wasn't so nice — too many bubbles — but they've sold more than 20 million units since then; that's a lot more than the iMac. Actually it would be a good shower head to use with the iMac."

As to the iMac's influence on other products, Esslinger says it's a fashion thing. "It's a good step for Apple to emphasize design. A certain amount of people would use any computer, because of what it does, not how it looks. The iMac expresses that things can be more beautiful, more enjoyable. But it's still fashion, and it could be out of fashion in two years. I'd say the more important thing is the Internet, and how people interface with it. And that depends on the software, which is essentially pretty old. The next big step will be the human interface of the computer's software."

Function should win over form, he says. "Even in some things like cutlery, even if everything's 100 years old, it works. Everything is functional. By principle, a computer is boring — just a box — but inside it's exciting. The book's form is hundreds of years old, but inside, each can be different and exciting." Yet he too has succumbed to the iMac allure.

"I have one in tangerine," he says. "I like it. I like translucency, and I'm glad it's coming back." **III**

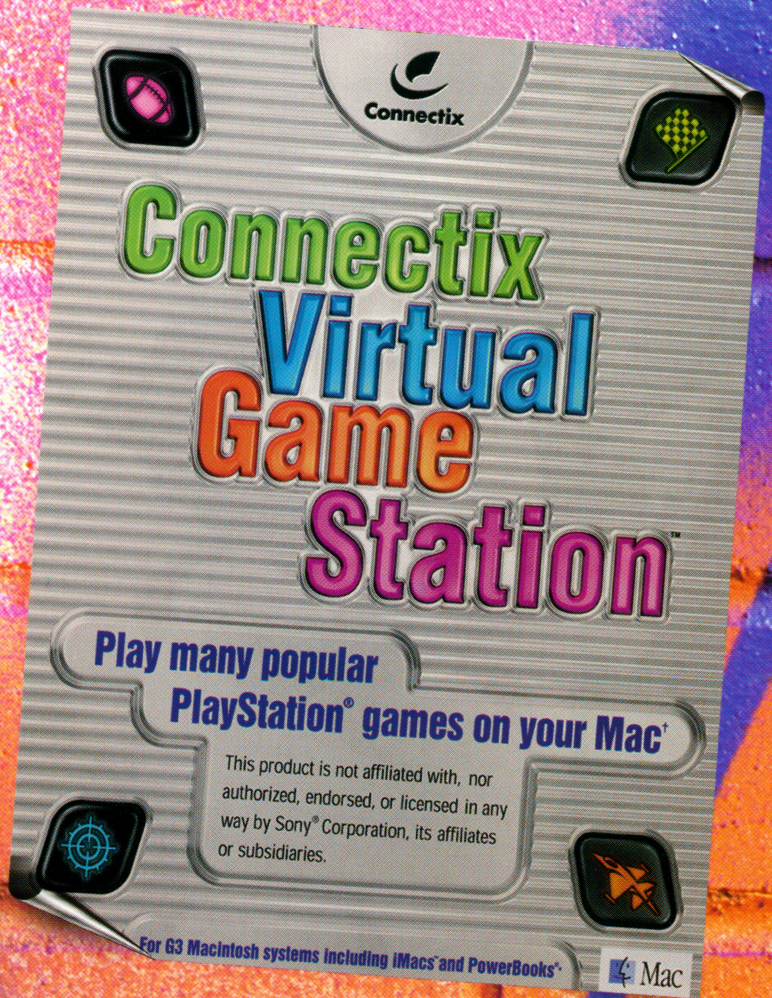


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